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Bureau of Business and Economic Research

Labovitz School of Business and Economics

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Driven to Discover

Consulting Report

Northeast Minnesota Forestry Analysis

For

Iron Range Resources and Rehabilitation Board

Iron Range Resources & Rehabilitation Board

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EXECUTIVE SUMMARY

The purpose of this study is to supply economic information and suggest trends for the landscape planners at the Minnesota Forest Resources Council. Planners requested the University of Minnesota Duluth Labovitz School's research bureau (BBER) to provide expert commentary on the counties of Minnesota's Arrowhead and Northeast. Where possible, we have compared our most recent data available (2011) with data from 2009, analyzing the growth or decline of individual sectors and industries.

Arrowhead Region

Top Ten Value Added, Output, Employment1 (wages, sales, jobs)

Mining iron ore remains a key player in the Arrowhead region economy, with almost $2.1 billion in wages, rents interest and profits and nearly $4.5 billion in sales or value of production, respectively. Mining iron ore also experienced a relatively large growth between 2009 and 2011, with a 103% increase in output. Employment and payroll for state and local government-education stands as the lead employer for the Arrowhead region in 2011, with 16,276 employees.

Among others, Private hospitals and Electric power generation, transmission and distribution are also extremely important to economy of the 7-county Arrowhead region.

Forest Products and Processing

The forest products and processing industry sectors' output per worker has risen substantially between in the last decade. This output per worker productivity increase is one reason that employment in many of the forestry sectors has declined or only shown relatively small growth in the recent years. The industry has been able to produce more product sales with fewer workers.

Generally, the forest products and processing sectors have shown a decline in all three measures.

Tourism and Recreation

The hospitality sectors have been relatively steady and are a cornerstone to all regions' economies. Food services, and drinking places, along with hotels and other accommodations, and some retail sectors are the economic drivers in the tourism industry.

Northeast Region

Top Ten Value Added, Output, Employment (wages, sales, jobs)

The Northeast remains a natural resource-based economy with iron ore leading the way. In terms of value added and output, iron ore remains as the biggest producer in the Northeast region of Minnesota, but stands as the 7th biggest employer in the area.

Forest Products and Processing

Many sectors among Forest Products and Processing have experienced significant decline in Value Added, Output and Employment measures. Reconstituted wood product manufacturing value added declined 74% in the two-year period. Commercial logging also experienced a fall in all three measures, 53% in Value Added, 59% in Output, and 28% in Employment.

Tourism and Recreation

All three economic measures for the Northeast (wages, sales, jobs) show that the two sectors food service and drinking places, and hotels and motels including casinos, have the greatest impact in the tourism and recreation sectors. The tourism compared to forestry chart clearly shows how important the sector food service and drinking places is to the region.

PROJECT DESCRIPTION

In 2003, the Minnesota Forest Resources Council (MFRC) Northeast Landscape Committee completed the first long-range forest landscape plan for 7.6 million acres in Cook, Lake, St. Louis and Carlton counties. The first generation landscape plan was based in part on a 2002 Northern Minnesota Forestry Analysis prepared by the University of Minnesota, Duluth Labovitz School of Business and Economics (the School). In 2011, the MFRC contracted with the School to update this analysis. This updated analysis is providing part of the basis for development of a second generation Northeast Landscape Plan. The revised plan is being developed by MFRC staff with guidance provided by the Northeast Landscape Committee.

This project will support the development of an economic framework for the second generation Northeast Landscape Plan. Developing forest-based economic development goals through the MFRC's Northeast Landscape Committee offers a unique opportunity to increase coordination and collaboration in support of increased forest-based economic development.

DELIVERABLES

This project's objective combines two BBER reports into one large study. The two reports are the Northeast Minnesota Forestry Analysis and the Northeast Minnesota Forestry Analysis 10-year Projections.

This BBER report highlights current economic data on selected industries that can serve as part of the basis for specific forest-based economic goals in the revised plan. This update focused on specific elements of past forestry analysis done by the BBER, including collection and analysis of data for the following:

- An economic overview of both the Arrowhead and Northeast Regions of Minnesota.
- The economic importance of forestry to each region.
- An analysis of tourism and recreation industries with a brief comparison to forestry.

The second report is a collection and analysis of data for the following:

- 10-year projections, with respect to housing, for forest-based industries value added, output and employment for the Northeast Region of Cook, Lake, St. Louis, and Carlton counties.
    - Minnesota Forest Resource Council staff worked with the BBER to integrate the 10-year projections into several planning scenarios were developed as part of the plan update process in cooperation with researchers from the University of Minnesota Boreal Forest and Community Resilience Project. The intent is to include specific forest-based economic goals in the updated plan.

SECTORING

For this analysis, forestry and tourism sectoring had changed from previous BBER studies. The forestry sectoring scheme was reformulated to better grasp the impact that the forestry industry, and its supporting sectors, has on the Arrowhead and Northeast Regions of Minnesota. It was broken up into the following groups, as well as included additional sectors.

- Primary Forest Products Manufacturing
- Secondary Forest Products Manufacturing
- Forestry and Logging

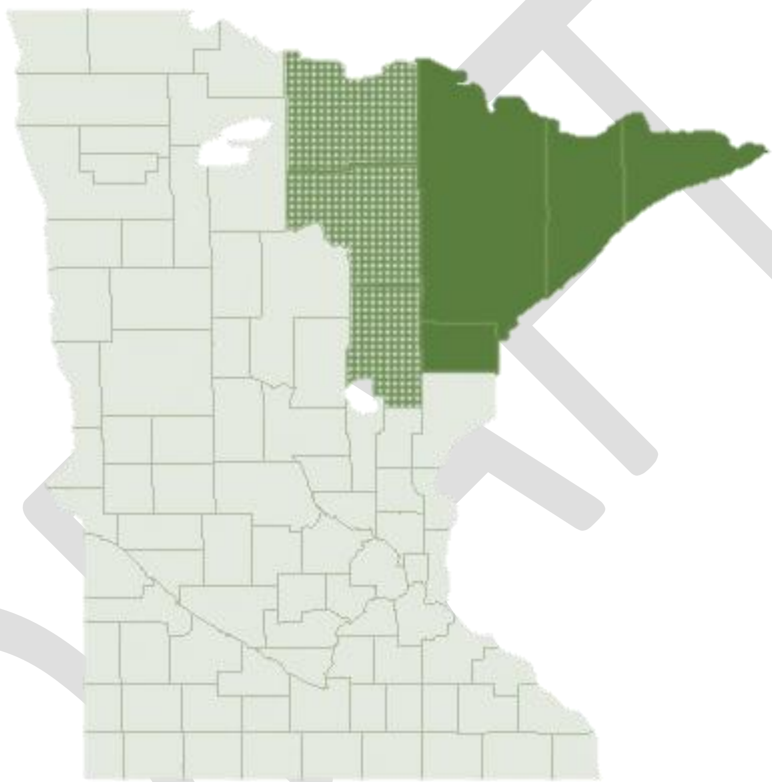
Three additional sectors were included in the analysis of the tourism and recreation industries including Museums, historical sites, zoos and parks, Independent artists, writers and performers, and Promoters of performing arts and sports and agents for public figures.

In this study, the BBER has used county data and impact models for value added, employment, and output measures. IMPLAN's economic multiplier analysis and input-output modeling software, Version 3.0 created has also been utilized. Data was for year 2011. Multipliers were calculated by dividing total impact by direct impact.

STUDY AREA

The geographic study area for this economic impact analysis includes the Arrowhead and Northeast Regions of Minnesota, modeled separately. The Arrowhead Region includes the seven Minnesota counties of Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, and St Louis. The Northeast Region, which is a smaller segment of Arrowhead, includes Carlton, Cook, Lake and St Louis Counties.

Figure 1: Study Area: Arrowhead and Northeast Regions, Photo Source: Wikipedia



PROCEDURES AND ASSUMPTIONS

INPUT-OUTPUT ANALYSIS

The mathematical input-output model used to estimate impacts in this study uses a matrix representation of the region's economy to predict the effect of changes in one industry on the others and by consumers, government, and suppliers on the economy. Input-output depicts inter-industry relations of an economy. It shows how the output of one industry is an input to each other industry. The matrix of the inputs and outputs shows how dependent each industry is on all the others in the economy, both as a consumer of its outputs and as a supplier of its inputs. Input-output economics has been used to study regional economies within a nation and has been used as a tool for national and regional economic planning. In addition, a main use of input-output analysis is to predict the economic impact of events as well as public investments or programs. It is this use of input-output analysis that is enacted in this study.

IMPLAN, LLC., [2] is the corporation that is responsible for the production of IMPLAN (IMpact analysis for PLANning) data and software. Using classic input-output analysis in combination with regional specific Social Accounting Matrices and Multiplier Models, IMPLAN provides a highly accurate and adaptable model for its users. The IMPLAN database contains county, state, zip code, and federal economic statistics, which are specialized by region, not estimated from national averages. These statistics are used to measure the effect of a given change or event on a regional or local economy.

IMPLAN's Social Accounting System describes transactions that occur between producers and intermediate and final consumers using a Social Accounting Matrix. One of the important aspects of Social Accounts is that they also examine non-market transactions, such as transfer payments between institutions. Other examples of these types of transactions would include government to household transfers in the form of unemployment benefits or household to government transfers in the form of taxes. Because Social Accounting Systems examine all the aspects of a local economy, they provide a more complete and accurate "snapshot" of the economy and its spending patterns.

[2] IMPLAN is used by state governments and the USDA Forest Service, among others. IMPLAN Group LLC, IMPLAN System (data and software), IMPLAN Group LLC, 16740 Birkdale Commons Pkwy, Suite 212, Huntersville, NC 28078. www.implan.com

IMPLAN also uses a multiplier model. Multipliers are a numeric way of describing the impact of a change. The Multiplier Model is derived mathematically using the input-output model and Social Accounting formats. Once there is a clear picture of the economy through the Social Accounting Matrix and Multipliers, its behavior can be predicted for a defined event, such as the construction of transmission lines.

IMPLAN MODELS AND DATA

There are two components to the IMPLAN system, the software and databases. The databases provide all information to create regional IMPLAN models. The software performs the calculations and provides an interface for the user to make final demand changes. IMPLAN software version 3 was used in this analysis.

Comprehensive and detailed data coverage of the IMPLAN study areas by county, and the ability to incorporate user-supplied data at each stage of the model building process, provides a high degree of flexibility in terms of both geographic coverage and model formulation. In this case, it is the definition of the counties of Minnesota and the definition of specific models for start-up and construction. Using the IMPLAN software and data, the BBER identified the industry's proposed expenditures in terms of the sectoring scheme for the model, in producer prices, and in historical dollars based on the year of the model and applied those dollars spent within the study area definition given for the impact analysis.

IMPLAN data files use federal government data sources including:

- US Bureau of Economic Analysis Benchmark I/O Accounts of the US
- US Bureau of Economic Analysis Output Estimates
- US Bureau of Economic Analysis REIS Program
- US Bureau of Labor Statistics County Employment and Wages (CEW) Program
- US Bureau of Labor Statistics Consumer Expenditure Survey
- US Census Bureau County Business Patterns
- US Census Bureau Decennial Census and Population Surveys
- US Census Bureau Economic Censuses and Surveys
- US Department of Agriculture Crop and Livestock Statistics

IMPLAN data files consist of the following components: employment, industry output, value added, institutional demands, national structural matrices, and inter-institutional transfers.

Impacts for the Northeast Minnesota Forestry models used the most recent IMPLAN data available, which is for the year 2011. All impacts are reported in 2013 dollars.

Economic impacts are made up of direct, indirect, and induced effects. The following are suggested assumptions for accepting the impact model:

- IMPLAN input-output is a production-based model.
- Employment numbers (from U.S. Department of Commerce secondary data) treat both full- and part-time individuals as being employed.
- Assumptions need to be made concerning the nature of the local economy before impacts can be interpreted.
- The IMPLAN model used was constructed for the year 2011 (most recent data available).

DEFINITIONS USED IN THIS REPORT

Measures

- **Gross Output**: The value of local production required to sustain activities.
- **Value Added**: A measure of the impacting industry's contribution to the local community; it includes wages, rents, interest, and profits.
- **Employment:** Estimates are in terms of jobs, not in terms of full-time equivalent employees. Therefore, these jobs may be temporary, part-time or short-term jobs.

Effects

- **Direct Effect**: Initial new spending in the study area resulting from the project.
- **Indirect Effect**: The additional inter-industry spending from the direct impact.
- **Induced Effect**: The impact of additional household expenditure resulting from the direct and indirect impact.
- **Multiplier Effect:** The idea that an initial amount of spending leads to increased consumption spending elsewhere.

Location Quotients

A location quotient is equal to the percentage of a reference region's activity in a particular industry divided by the percentage of activity in that same industry for a larger region, usually the state or nation. The assumptions associated with the location quotient are obviously restrictive. However, if nothing else, the location quotient does provide an indication of the relative concentration of a particular industry in a region. The greater the location quotient value, the more important this industry is to the economic base of the region. What is more, changes in location quotient values over time represent changes in the industry's relative importance to the region's economic base. As such, location quotients are quite valuable as indicators of a region's economic base.

INDUSTRY DEFENITIONS

For this analysis, forestry sectoring is listed below and are divided into three sections. They are

- Primary Forest Products Manufacturing
- Secondary Forest Products Manufacturing
- Forestry and Logging

Data was for year 2011.

IMPLAN Sectors Used

Source: IMPLAN

Primary Forest Products Manufacturing
Electric power generation, transmission, and distribution (only 1.7% applies to forestry)*
Sawmills and wood preservation
Veneer and plywood manufacturing
Reconstituted wood product manufacturing
Paper mills

Secondary Forest Products Manufacturing
Engineered wood member and truss manufacturing
Wood windows and doors and millwork manufacturing
Wood container and pallet manufacturing
Prefabricated wood building manufacturing
All other miscellaneous wood product manufacturing
Paperboard mills
Paperboard container manufacturing
Coated and laminated paper, packaging paper and plastics film manufacturing
All other paper bag and coated and treated paper manufacturing
Stationery product manufacturing
Sanitary paper product manufacturing
All other converted paper product manufacturing
Wood kitchen cabinet and countertop manufacturing
Nonupholstered wood household furniture manufacturing
Wood television, radio, and sewing machine cabinet manufacturing
Office furniture and custom architectural woodwork and millwork manufacturing
Showcase, partition, shelving, and locker manufacturing

Forestry and Logging
Forestry, forest products, and timber tract production
Commercial logging

Support activities for agriculture and forestry (only 2.2% applies to forestry)*
Transport by truck (only 1.2% applies to forestry)*

*The sector of Electric power generation, transmission, and distribution has been deflated to represent the portion of the sector specifically related to forestry. In this case, 1.7 percent of all electric power generation is directly related to forestry, according to the Energy Information Administration (EIA). Thus, the numbers reported in this analysis for electric power display 1.7 percent of its total to better reflect the current economic status of the forestry industry.

Some sectors among the Forestry and Logging section have been deflated to represent only the forestry related work done in that sector. For example, about 1.2 percent of all trucking is forestry related, according to the Minnesota Department of Economic Development, thus the original Value Added, Output, and Employment for Trucking in the Arrowhead Region have been multiplied by 1.2 percent to display Trucking specifically related to forestry.

MODELING POINTS

As noted in the IMPLAN User's Guide, IMPLAN modeling issues associated with small study areas of county-level impacts, like that in this report, include the following:

A small area can have a high level of "leakage." Leakages are any payments made to imports or value added sectors that do not in turn re-spend the dollars within the region.

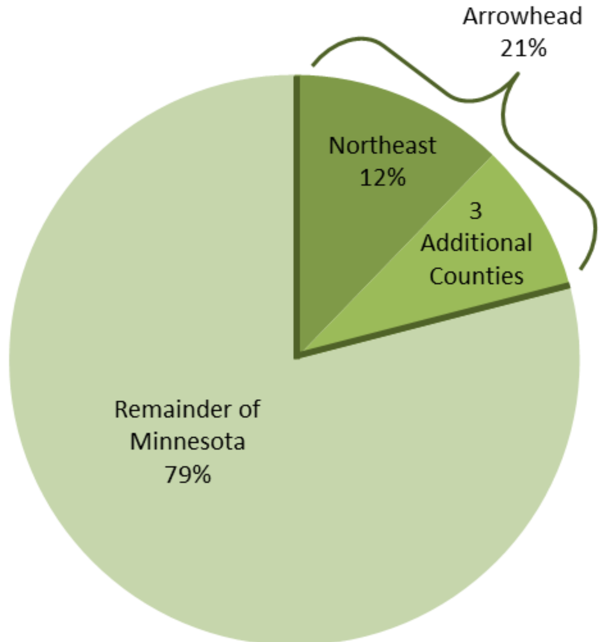
A study area that is actually part of a larger functional economic region will likely miss important backward linkages. For example, linkages with the labor force may be missing. Workers who live and spend outside the study area may actually hold local jobs.

IMPLAN study areas are typically a collection of counties. A county is one of the smallest standard areas for IMPLAN data sets.

STUDY AREA OVERVIEW

The Northeast Region accounts for roughly 12% of the Minnesota's total land area. The Arrowhead Region, which adds three additional counties to the Northeast, makes up almost 21% of Minnesota's total 86,940 square miles.

Figure 2: Study Area Overview, Arrowhead and Northeast Regional Land Area


Arrowhead
21%
Northeast
12%
3
Additional
Counties
Remainder of
Minnesota
79%

ARROWHEAD REGION

The Arrowhead Region includes the seven Minnesota counties of Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, and St Louis. The table below displays a summary of totals for the different sections of our analysis. These numbers are further detailed in following tables.

Figure 3: Counties of the Arrowhead Region, Photo Source: Wikipedia

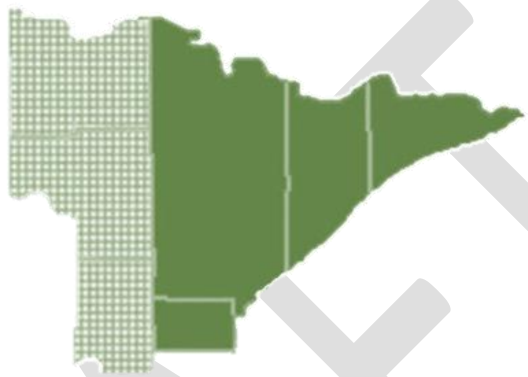


Table 1: Arrowhead, Summary, 2011

Source: IMPLAN	*Value Added*	*Output*	*Employment*
Arrowhead Region	**$14,797,341,246**	**$27,295,361,461**	**181,265**
Forestry	**$574,724,821**	**$2,031,655,896**	**3822**
Prim. Forestry Mfg.	$520,787,418	$1,883,952,937	2649
Sec. Forestry Mfg.	$26,475,004	$89,169,799	433
Forestry and Logging	$27,462,399	$58,533,160	739
Tourism and Recreation	**$481,500,998**	**$1,003,585,151**	**17,732**

REGIONAL ECONOMIC OVERVIEW

The table below shows the Value Added, Output and Employment totals for the Arrowhead Region. Regional value added increased almost $2.7 billion dollars between 2009 and 2011, equating to a total value added of almost $14.8 billion in 2011. Output in the Arrowhead Region increased from almost $22.6 billion in 2009 to almost $27.3 billion in 2011, with the top producing sector being Mining iron ore in both years. The seven-county area employs approximately 181 thousand people, up from 175 thousand in 2009. With over 3.4 million full- and part-time workers in the state of Minnesota, the Arrowhead region accounts for about 5.2% of that total employment.

Table 2: Arrowhead, Regional Economic Overview, Totals, 2011

Source: IMPLAN	***Value Added***	***Output***	***Employment***
Total	$14,797,341,246	$27,295,361,461	181,265

The Tables 3 through 5 display the top 10 sectors for Value Added, Output and Employment, respectively, for the Arrowhead Region in 2011. These tables reveal that Mining iron ore remains a dominant sector in terms of value added and output measures of the economy, but is ranked sixth in employment for 2011. Employment and payroll for state and local government education remains the top employer in the Arrowhead Region in 2011.

Figures 4 through 6 compare the top 10 sectors in 2011 to their values in 2009. Mining iron ore experienced an increase in all three measures: 128% increase in Value Added, 103% in Output and 35% in Employment. Real estate establishments increased in both Value Added and Output but not in employment, while Private hospitals employment increased 44%.

Table 3: Arrowhead, Regional Economic Overview, Top 10 Value Added, 2011

Description	***Value Added***
Mining iron ore	$2,053,235,072
Employment and payroll only (state & local govt, education)	$950,353,280
Electric power generation, transmission, and distribution	$922,102,272
Private hospitals	$803,850,496
Insurance carriers	$772,951,552
Monetary authorities and depository credit intermediation act.	$578,027,904
Paper mills	$476,140,032
Employment and payroll only (state & local govt, non-education)	$450,515,360
Real estate establishments	$429,061,760
Wholesale trade businesses	$419,820,544

Source: IMPLAN

Figure 4: Arrowhead, Regional Economic Overview, Top 10 Value Added, 2011 Compared to 2009 Values

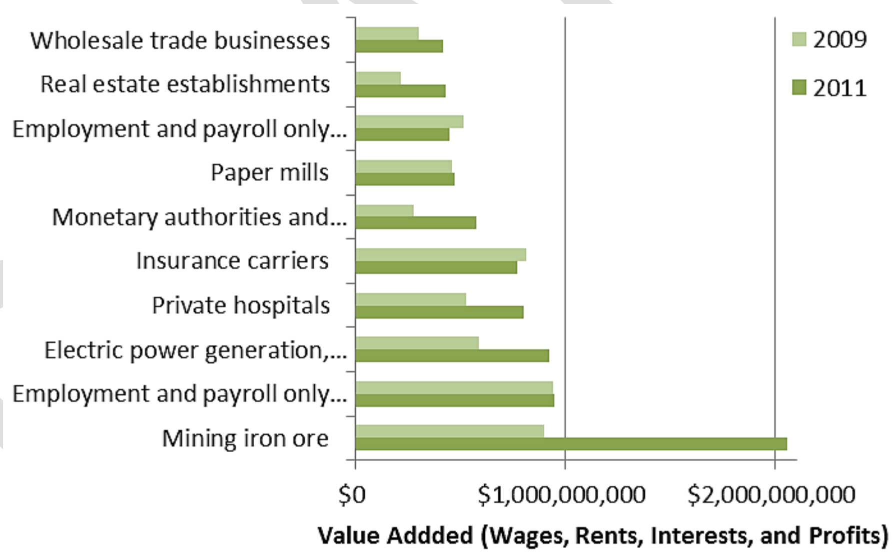


Table 4: Arrowhead, Regional Economic Overview, Top 10 Output, 2011

Description	***Output***
Mining iron ore	$4,455,822,336
Paper mills	$1,787,224,832
Electric power generation, transmission, and distribution	$1,533,784,704
Private hospitals	$1,477,992,704
Insurance carriers	$1,221,804,160
Employment and payroll only (state & local govt, education)	$950,353,216
Monetary authorities and depository credit intermediation activities	$873,857,920
Wholesale trade businesses	$600,409,280
Food services and drinking places	$590,931,264
Real estate establishments	$569,183,808

Source: IMPLAN

Figure 5: Arrowhead, Regional Economic Overview, Top 10 Output, 2011 Compared to 2009 Values

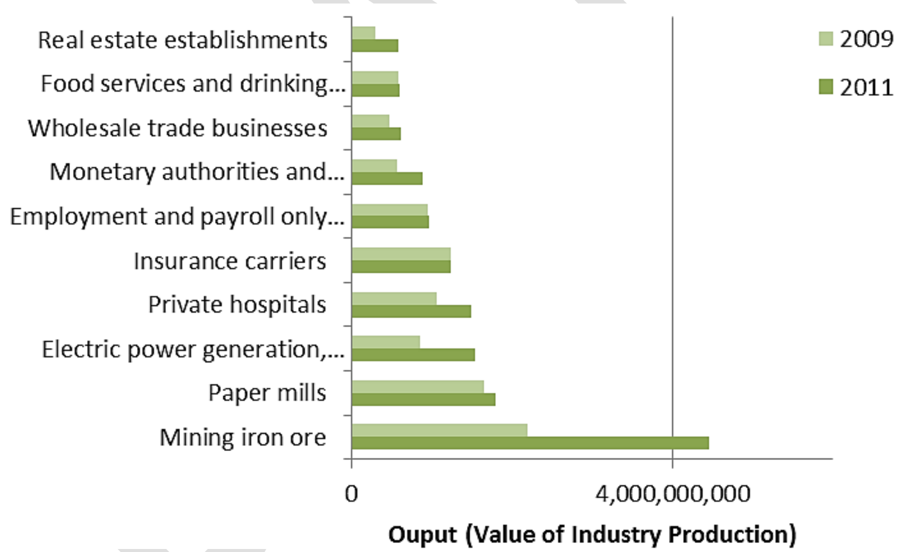


Table 5: Arrowhead, Regional Economic Overview, Top 10 Employment, 2011

Description	***Employment***
Employment and payroll only (state & local govt, education)	16,276
Food services and drinking places	11,755
Private hospitals	11,541
Nursing and residential care facilities	9,987
Employment and payroll only (state & local govt, non-education)	8,152
Mining iron ore	4,624
Insurance carriers	4,372
Retail Stores - General merchandise	3,949
Individual and family services	3,764
Wholesale trade businesses	3,759

Source: IMPLAN

Figure 6: Arrowhead, Regional Economic Overview, Top 10 Employment, 2011 Compared to 2009 Values

FORESTRY

The forestry sectors are broken out into three sections: Primary Forestry Manufacturing, Secondary Forestry Manufacturing, and Forestry and Logging.

The sector of Electric power generation, transmission, and distribution has been deflated to represent the portion of the sector specifically related to forestry. In this case, 1.7% of all electric power generation is directly related to forestry, according to the Energy Information Administration (EIA). Thus, the numbers reported in this analysis for electric power display 1.7% of its total to better reflect the current economic status of the forestry industry.

Some sectors among the Forestry and Logging section have been deflated to represent only the forestry related work done in that sector. For example, about 1.2% of all trucking is forestry related, according to the Minnesota Department of Economic Development, thus the original Value Added, Output, and Employment for Trucking in the Arrowhead Region have been multiplied by 1.2% to display Trucking specifically related to forestry.

Table 6: Arrowhead, Forestry, Totals, 2011

Source: IMPLAN	***Value Added***	***Output***	***Employment***
Prim. Forestry Mfg.	$520,787,418	$1,883,952,937	2649
Sec. Forestry Mfg.	$26,475,004	$89,169,799	433
Forestry and Logging	$27,462,399	$58,533,160	739
Total Forestry	$574,724,821	$2,031,655,896	3822

Primary Forestry Products Manufacturing had a Value Added impact of almost $521 million for 2011, decreasing 10% from 2009. Output from Primary Forestry Products Manufacturing increased 2% from 2009, totaling almost $1.9 billion in 2011. Employment had a decrease in Primary Forestry of 8%, from 2,894 jobs in 2009 to 2,649 in 2011.

Secondary Forest Products Manufacturing decreased by 25% in Value Added and 13% in Output in 2011. Employment decreased from 498 to 433.

Forestry and Logging experienced a 34% employment decrease of 372 total jobs in 2011. Output declined by almost $76.7 million or 57% and Value Added declined from almost $49.1 in 2009 to over $27.5 million in 2011, a loss of 44%.

Figure 7: Arrowhead, Forestry, Value Added Totals, 2011 Compared to 2009 Values

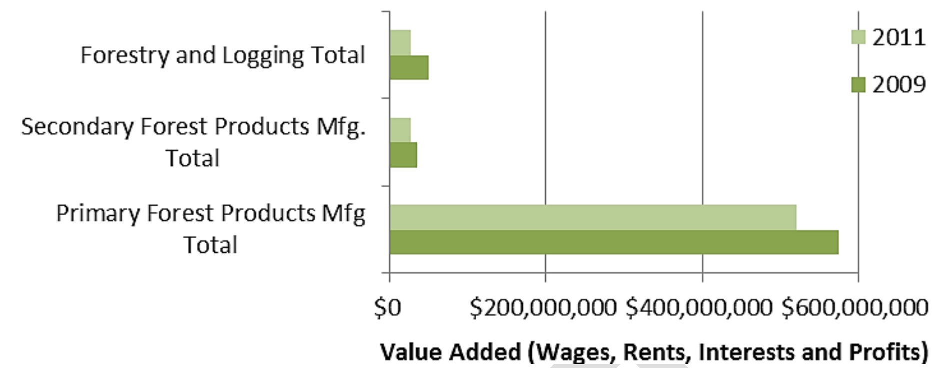


Figure 8: Arrowhead, Forestry, Output Totals, 2011 Compared to 2009 Values

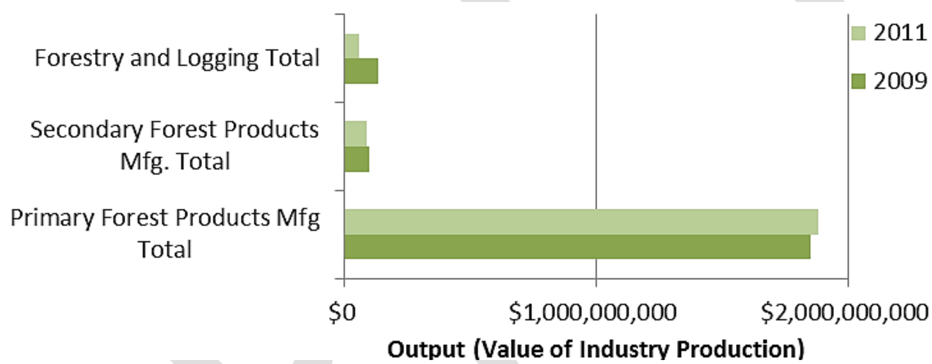


Figure 9: Arrowhead, Forestry, Employment Totals, 2011 Compared to 2009 Values

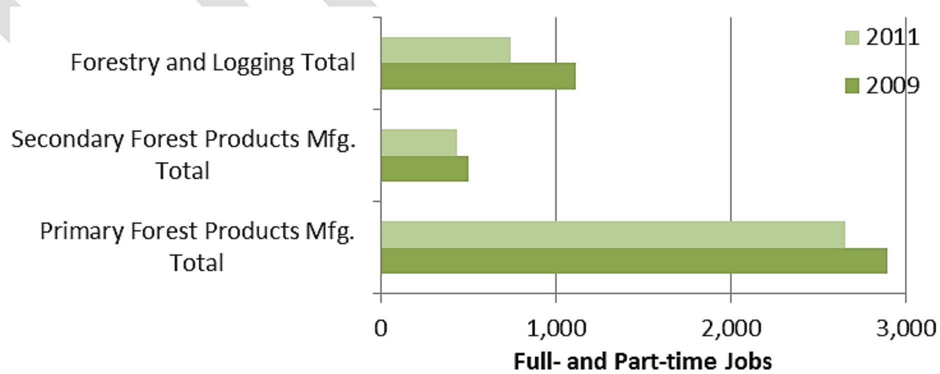


Table 7: Arrowhead, Forestry, Value Added, 2011

Source: IMPLAN

Primary Forest Products Manufacturing	***Value Added***
Paper mills	$476,140,032
Reconstituted wood product manufacturing	$18,808,226
Electric power generation, transmission, and distribution[1]	$15,675,739
Sawmills and wood preservation	$8,809,402
Veneer and plywood manufacturing	$1,354,019
Primary Forest Products Mfg. Total	$520,787,418
Secondary Forest Products Manufacturing	***Value Added***
All other paper bag and coated and treated paper manufacturing	$8,578,449
Wood container and pallet manufacturing	$5,327,342
All other miscellaneous wood product manufacturing	$4,291,715
Wood windows and doors and millwork manufacturing	$2,379,743
Wood kitchen cabinet and countertop manufacturing	$2,357,468
Paperboard container manufacturing	$1,612,217
Showcase, partition, shelving, and locker manufacturing	$621,169
Nonupholstered wood household furniture manufacturing	$589,763
Prefabricated wood building manufacturing	$285,589
Engineered wood member and truss manufacturing	$229,113
All other converted paper product manufacturing	$136,763
Office furniture and custom architectural woodwork and millwork manufacturing	$65,673
Secondary Forest Products Mfg. Total	$26,475,004
Forestry and Logging	***Value Added***
Commercial logging	$24,294,306
Forestry, forest products, and timber tract production	$2,274,857
Transport by truck[2]	$816,310
Support activities for agriculture and forestry[3]	$76,927
Forestry and Logging Total	$27,462,399
Arrowhead Forestry Value Added Grand Total	**$574,724,821**

[1] 1.7% of totals for Electric power generation, transmission, and distribution is related to forestry manufacturing, deflated number is displayed, EIA

[2] 1.2% of totals for Transport by truck is related to forestry and logging, deflated number is displayed, DEED

[3] 2.2% of totals for Support activities for agriculture and forestry are related to forestry and logging, deflated number is displayed, DEED

Figure 10: Arrowhead, Forestry, Value Added, 2011 Primary Forestry Compared to 2009 Values

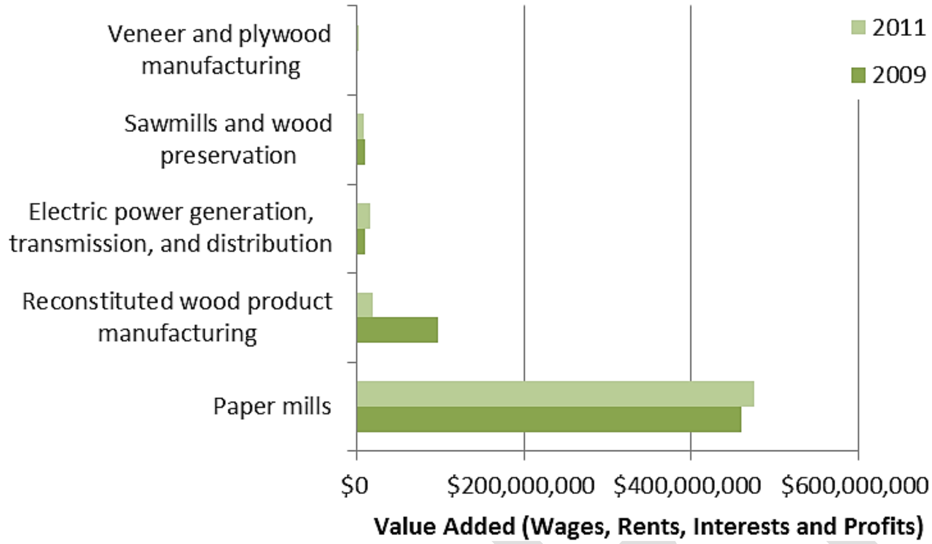


Figure 11: Arrowhead, Forestry, Value Added, 2011 Secondary Forestry Compared to 2009 Values

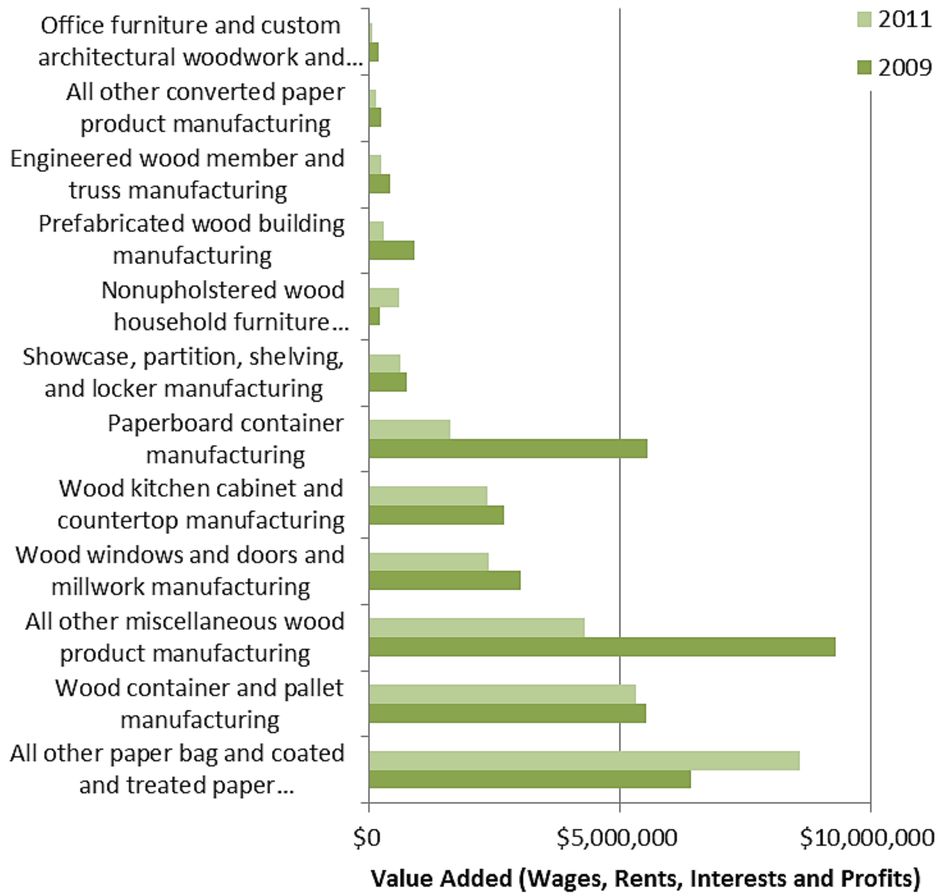


Figure 12: Arrowhead, Forestry, Value Added, 2011 Forestry and Logging Compared to 2009 Values

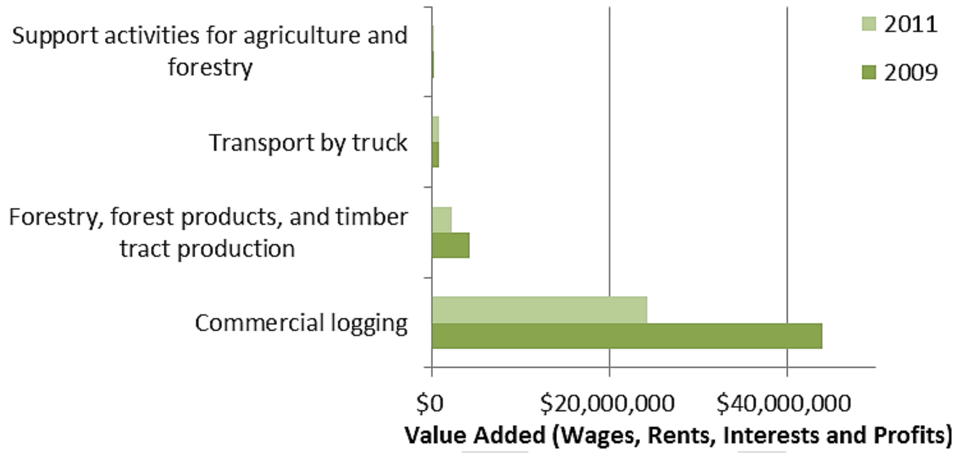


Table 8: Arrowhead, Forestry, Output, 2011

Source: IMPLAN

Primary Forest Products Manufacturing	***Output***
Paper mills	$1,787,224,832
Reconstituted wood product manufacturing	$36,752,488
Sawmills and wood preservation	$29,873,788
Electric power generation, transmission, and distribution[1]	$26,074,340
Veneer and plywood manufacturing	$4,027,489
Primary Forest Products Mfg. Total	$1,883,952,937
Secondary Forest Products Manufacturing	***Output***
All other paper bag and coated and treated paper manufacturing	$35,747,288
Wood container and pallet manufacturing	$11,750,868
All other miscellaneous wood product manufacturing	$10,417,584
Wood windows and doors and millwork manufacturing	$9,700,840
Paperboard container manufacturing	$8,284,377
Wood kitchen cabinet and countertop manufacturing	$8,017,358
Showcase, partition, shelving, and locker manufacturing	$1,907,878
All other converted paper product manufacturing	$974,606
Nonupholstered wood household furniture manufacturing	$934,720
Prefabricated wood building manufacturing	$627,694
Engineered wood member and truss manufacturing	$603,122
Office furniture and custom architectural woodwork and millwork manufacturing	$203,464
Secondary Forest Products Mfg. Total	$89,169,799
Forestry and Logging	***Output***
Commercial logging	$53,044,768
Forestry, forest products, and timber tract production	$3,451,718
Transport by truck[2]	$1,891,986
Support activities for agriculture and forestry[3]	$144,688
Forestry and Logging Total	$58,533,160
Arrowhead Forestry Output Grand Total	**$2,031,655,896**

[1] 1.7% of totals for Electric power generation, transmission, and distribution is related to forestry manufacturing, deflated number is displayed, EIA

[2] 1.2% of totals for Transport by truck is related to forestry and logging, deflated number is displayed, DEED

[3] 2.2% of totals for Support activities for agriculture and forestry are related to forestry and logging, deflated number is displayed, DEED

Figure 13: Arrowhead, Forestry, Output, 2011 Primary Forestry Compared to 2009 Values

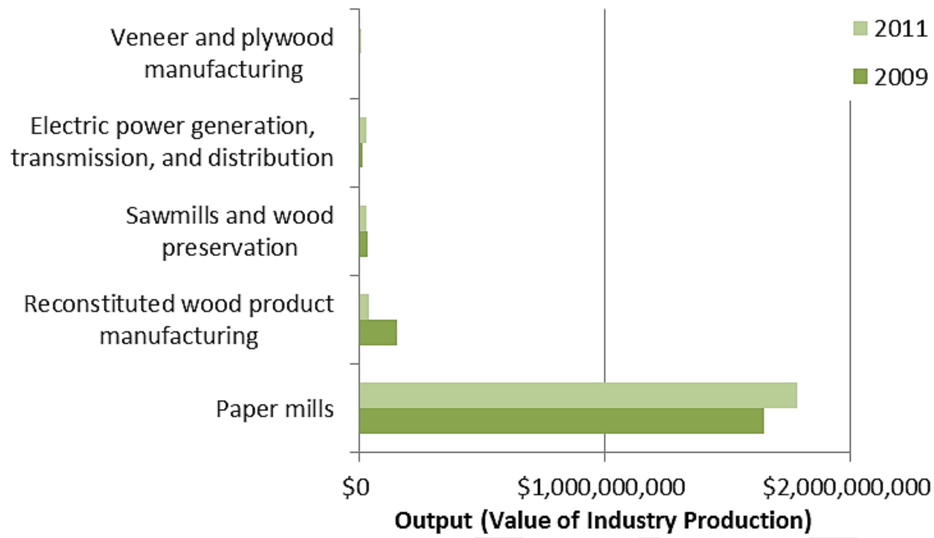


Figure 14: Arrowhead, Forestry, Output, 2011 Secondary Forestry Compared to 2009 Values

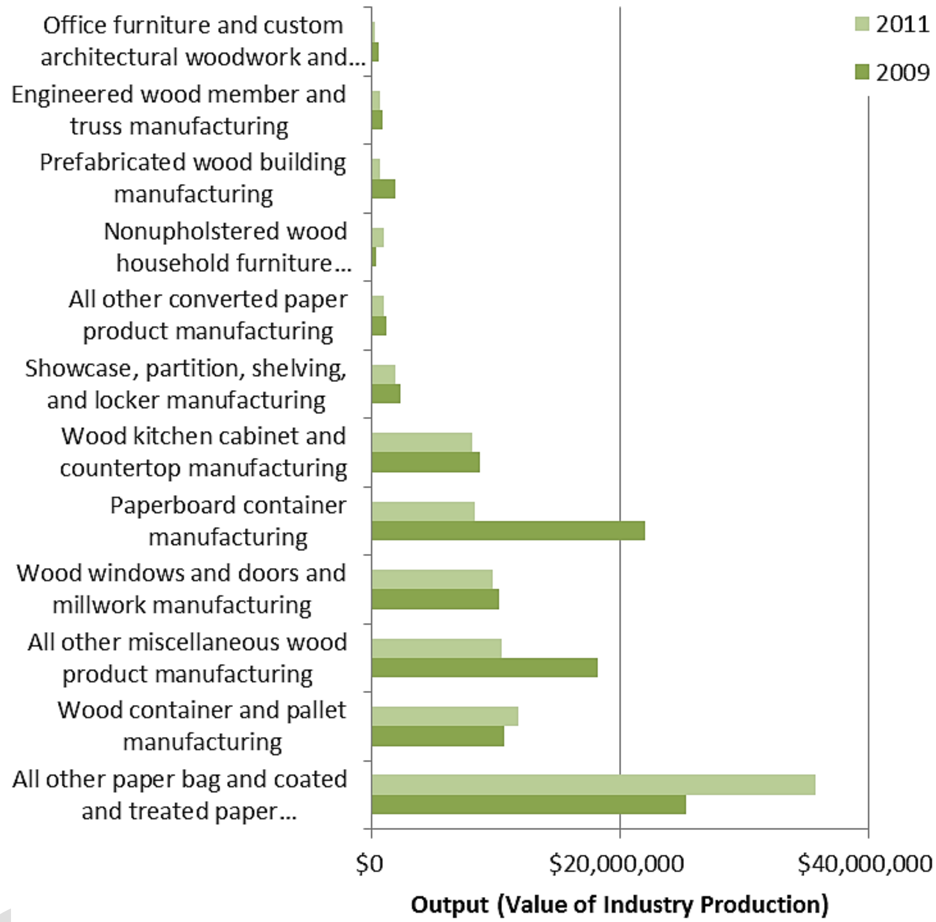


Figure 15: Arrowhead, Forestry, Output, 2011 Forestry and Logging Compared to 2009 Values

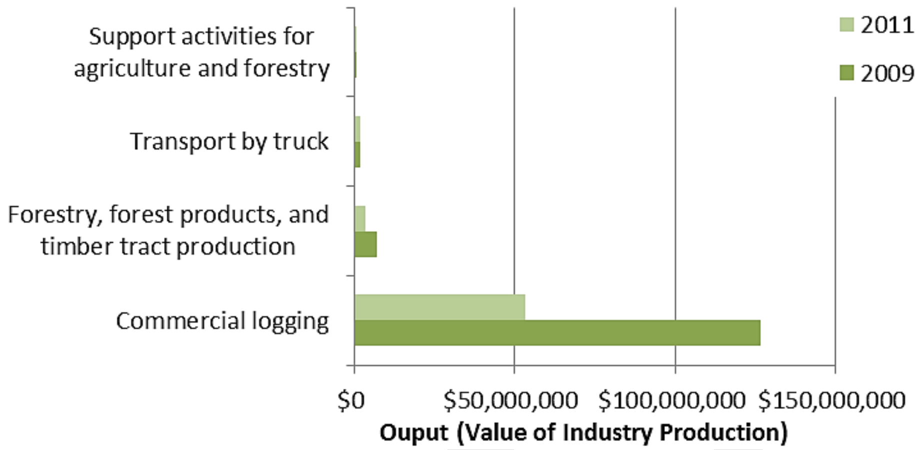


Table 9: Arrowhead, Forestry, Employment, 2011

Source: IMPLAN

Primary Forest Products Manufacturing	***Employment***
Paper mills	2,364
Reconstituted wood product manufacturing	131
Sawmills and wood preservation	106
Electric power generation, transmission, and distribution[1]	31
Veneer and plywood manufacturing	17
Primary Forest Products Mfg. Total	2,649
Secondary Forest Products Manufacturing	***Employment***
All other paper bag and coated and treated paper manufacturing	117
Wood container and pallet manufacturing	81
Wood kitchen cabinet and countertop manufacturing	67
Wood windows and doors and millwork manufacturing	64
All other miscellaneous wood product manufacturing	54
Paperboard container manufacturing	22
Showcase, partition, shelving, and locker manufacturing	10
Nonupholstered wood household furniture manufacturing	5
Prefabricated wood building manufacturing	4
All other converted paper product manufacturing	4
Engineered wood member and truss manufacturing	3
Office furniture and custom architectural woodwork and millwork manufacturing	2
Secondary Forest Products Mfg. Total	433
Forestry and Logging	***Employment***
Commercial logging	708
Transport by truck[2]	15
Support activities for agriculture and forestry[3]	10
Forestry, forest products, and timber tract production	6
Forestry and Logging Total	739
Arrowhead Forestry Employment Grand Total	**3,822**

[1] 1.7% of totals for Electric power generation, transmission, and distribution is related to forestry manufacturing, deflated number is displayed, EIA

[2] 1.2% of totals for Transport by truck is related to forestry and logging, deflated number is displayed, DEED

[3] 2.2% of totals for Support activities for agriculture and forestry are related to forestry and logging, deflated number is displayed, DEED

Figure 16: Arrowhead, Forestry, Employment, 2011 Primary Forestry Compared to 2009 Values

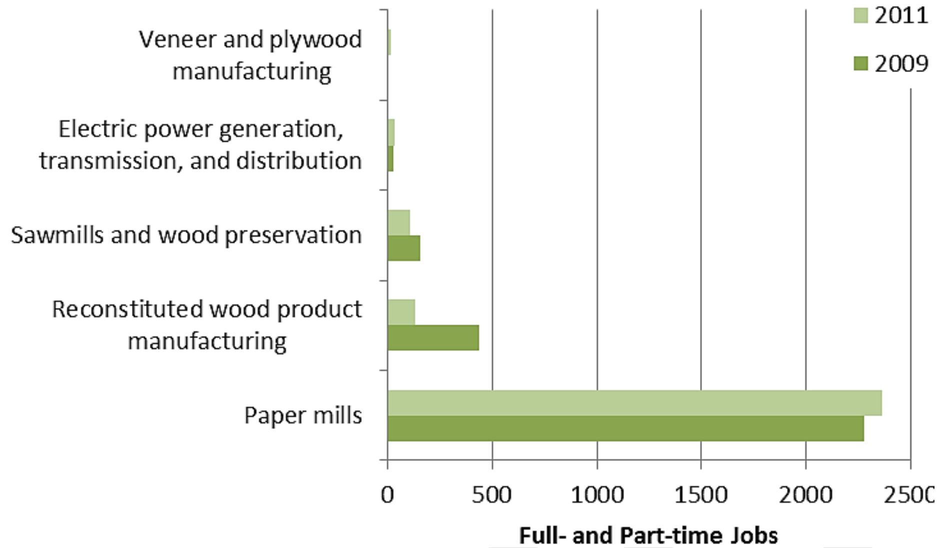


Figure 17: Arrowhead, Forestry, Employment, 2011 Secondary Forestry Compared to 2009 Values

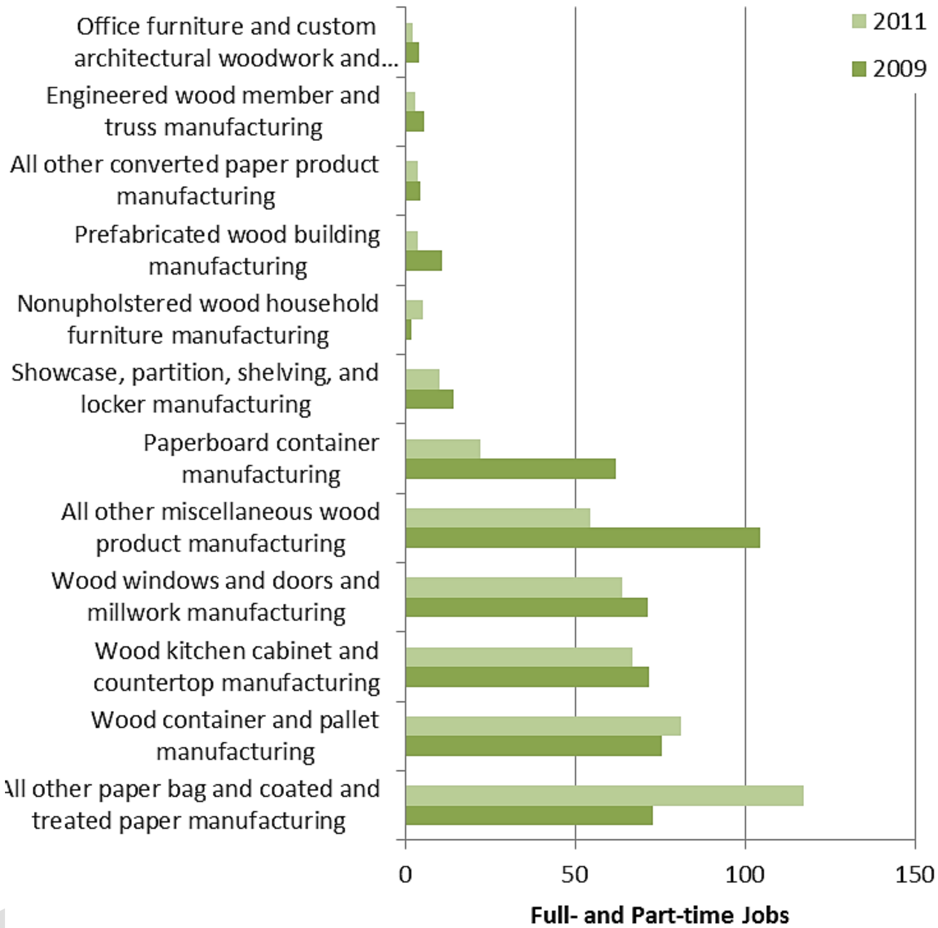


Figure 18: Arrowhead, Forestry, Employment, 2011 Forestry and Logging Compared to 2009 Values

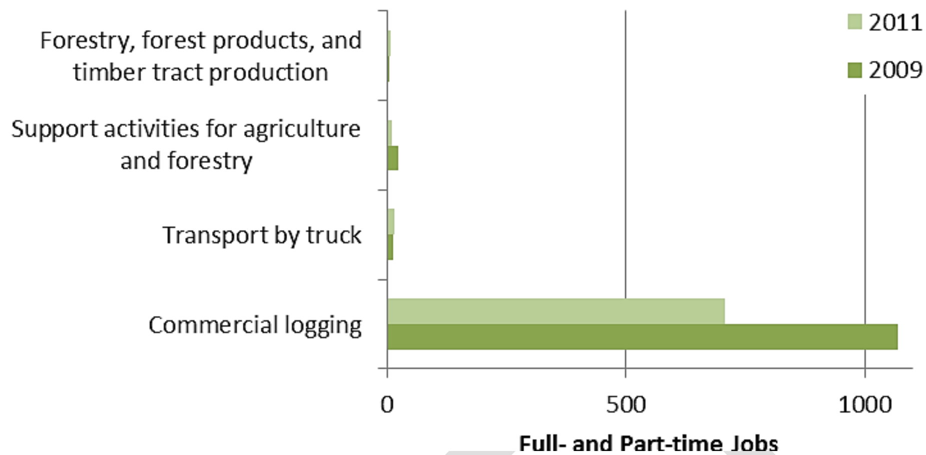


Figure 19: Arrowhead, Forestry, Summary, Top Performing Sectors, 2011

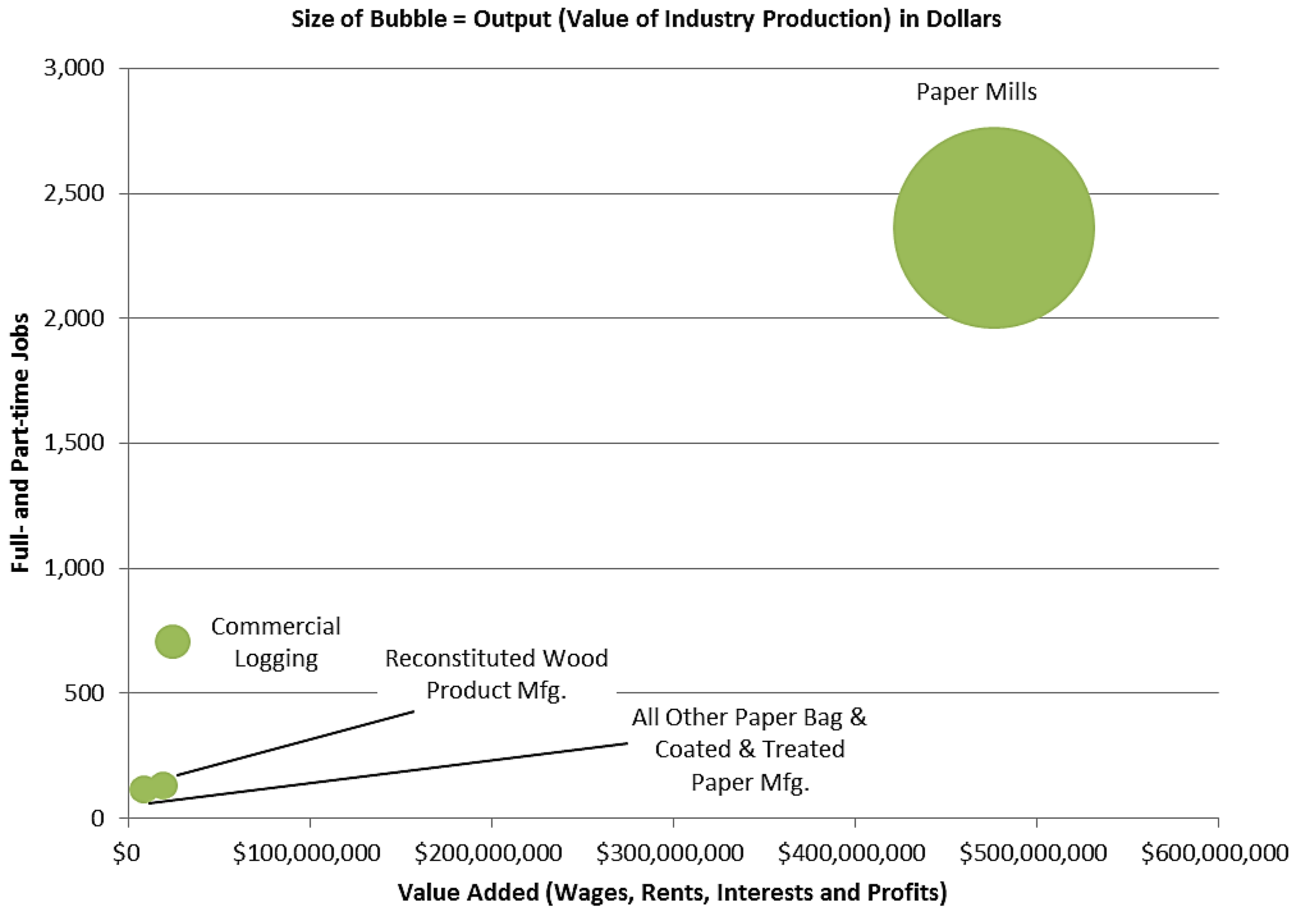
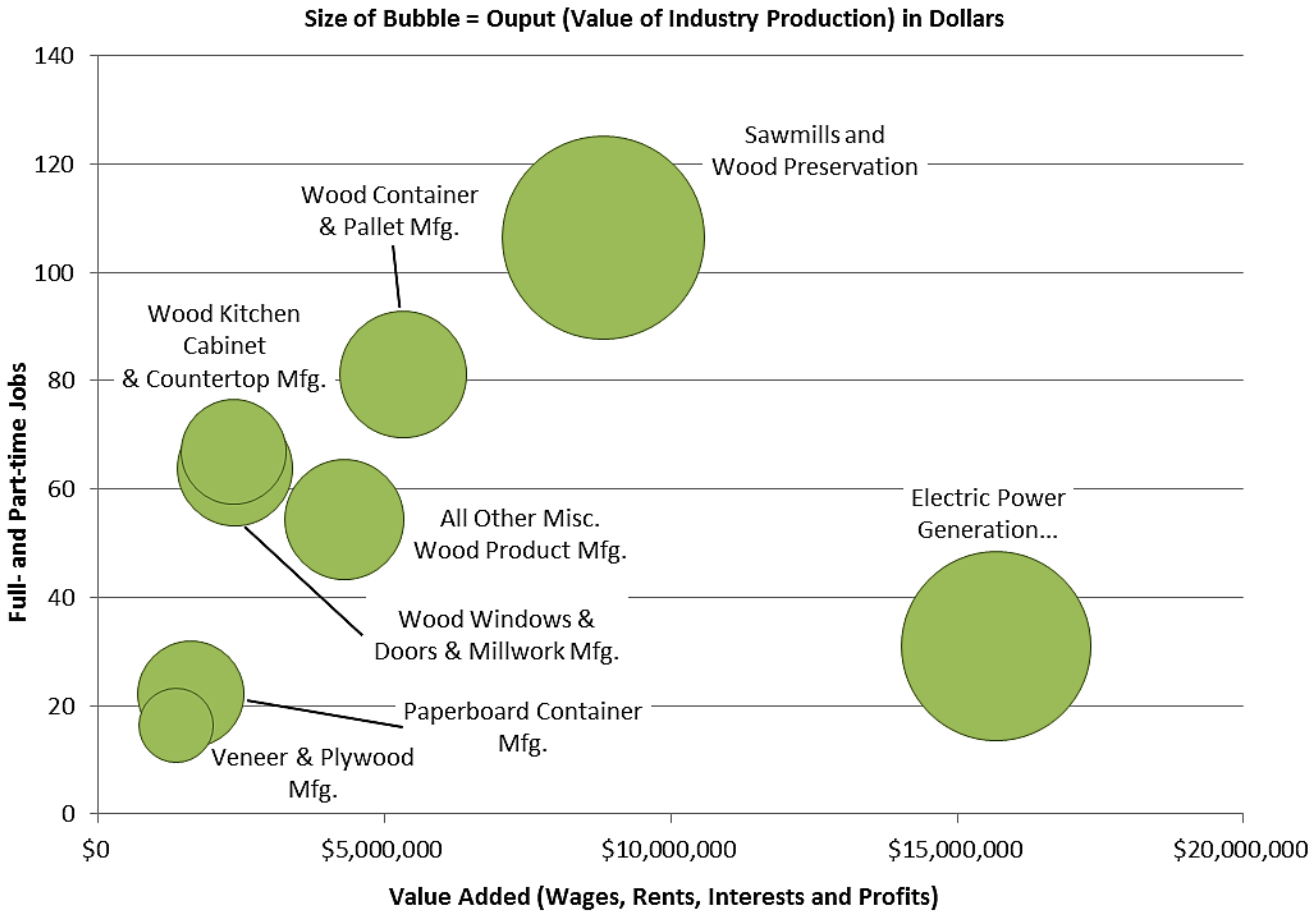


Figure 20: Arrowhead, Forestry, Summary, Middle Performing Sectors, 2011



TOURISM AND RECREATION

The Tourism and Recreations sectors remain key players in the Arrowhead Region of Minnesota. As you saw in the Arrowhead economic overview, Food services and drinking places holds a spot in the top 10 in both Employment and Output. Food services and drinking places and Hotels, motels and casino hotels have the largest tourism impact on the Arrowhead in all three measures.

Table 10: Arrowhead, Tourism and Recreation, Totals, 2011

Source: IMPLAN	***Value Added***	***Output***	***Employment***
Total	$481,500,998	$1,003,585,151	17,732

The tables and figures below display the detail of the Tourism and Recreation industry in the Arrowhead region of Minnesota. Generally the tourism industries have grown since 2009 in both Value Added and Output, but Employment had experienced a general decline among the tourism sectors.

Table 11: Arrowhead, Tourism and Recreation, Value Added, 2011

Source: IMPLAN

Description	***Value Added***
Food services and drinking places	$290,709,824
Hotels and motels, including casino hotels	$89,616,768
Amusement parks, arcades, and gambling industries	$23,056,236
Other amusement and recreation industries	$18,207,970
Other accommodations	$17,921,568
Museums, historical sites, zoos, and parks	$15,985,066
Automotive equipment rental and leasing	$9,614,557
Performing arts companies	$4,443,170
Fitness and recreational sports centers	$4,158,286
Promoters of performing arts and sports and agents for public figures	$3,411,215
Independent artists, writers, and performers	$2,187,441
Bowling centers	$1,816,956
Spectator sports companies	$371,941
Total	**$481,500,998**

Figure 21: Arrowhead, Tourism and Recreation, Value Added, 2011 Compared to 2009 Values

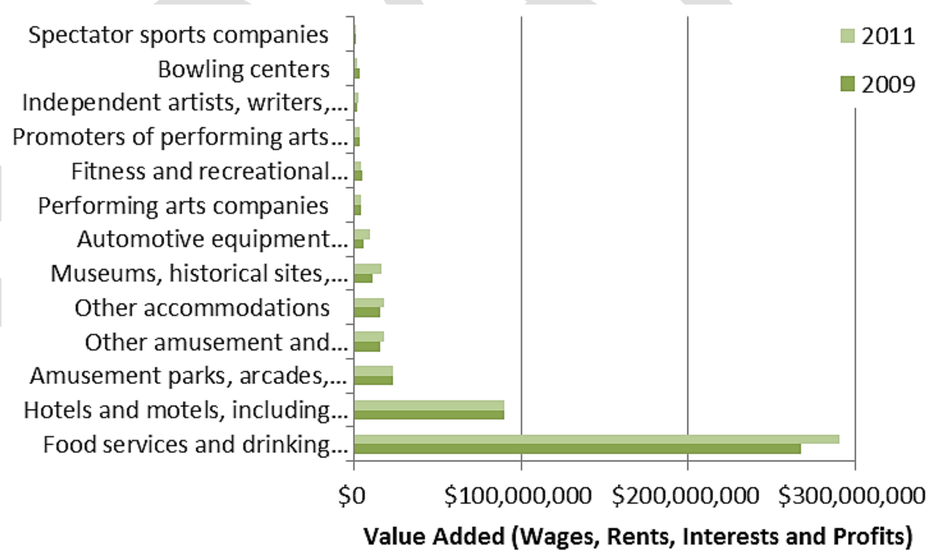


Table 12: Arrowhead, Tourism and Recreation, Output, 2011

Source: IMPLAN

Description	***Output***
Food services and drinking places	$590,931,264
Hotels and motels, including casino hotels	$200,014,960
Amusement parks, arcades, and gambling industries	$48,936,060
Other accommodations	$41,824,828
Other amusement and recreation industries	$32,294,858
Museums, historical sites, zoos, and parks	$29,262,002
Automotive equipment rental and leasing	$15,445,858
Promoters of performing arts and sports and agents for public figures	$13,398,359
Performing arts companies	$11,092,228
Fitness and recreational sports centers	$8,338,560
Independent artists, writers, and performers	$6,801,030
Bowling centers	$2,867,285
Spectator sports companies	$2,377,859
Total	**$1,003,585,151**

Figure 22: Arrowhead, Tourism and Recreation, Output, 2011 Compared to 2009 Values

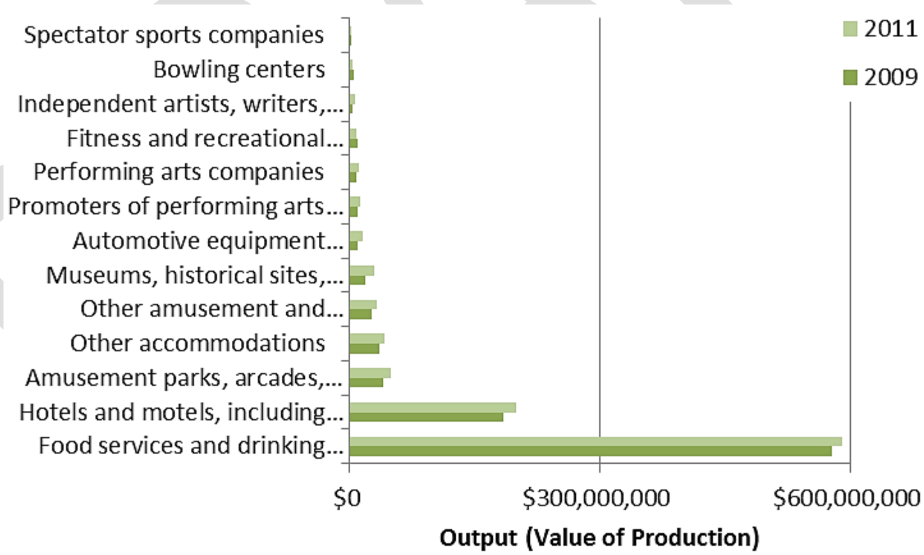


Table 13: Arrowhead, Tourism and Recreation, Employment, 2011

Source: IMPLAN

Description	***Employment***
Food services and drinking places	11,755
Hotels and motels, including casino hotels	2,194
Amusement parks, arcades, and gambling industries	774
Other amusement and recreation industries	766
Other accommodations	584
Performing arts companies	458
Promoters of performing arts and sports and agents for public figures	324
Fitness and recreational sports centers	263
Museums, historical sites, zoos, and parks	251
Independent artists, writers, and performers	119
Spectator sports companies	90
Bowling centers	86
Automotive equipment rental and leasing	70
Total	**17,732**

Figure 23: Arrowhead, Tourism and Recreation, Employment, 2011 Compared to 2009 Values

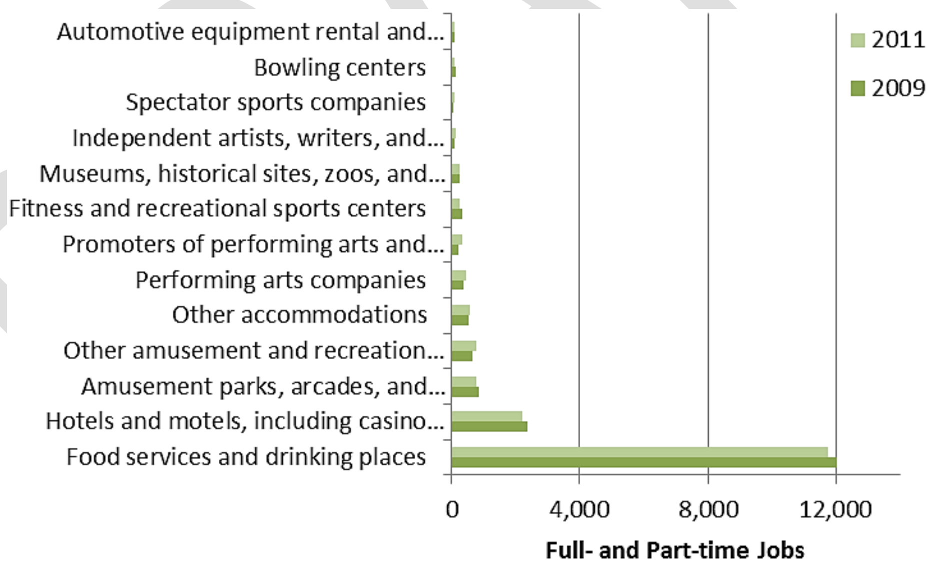
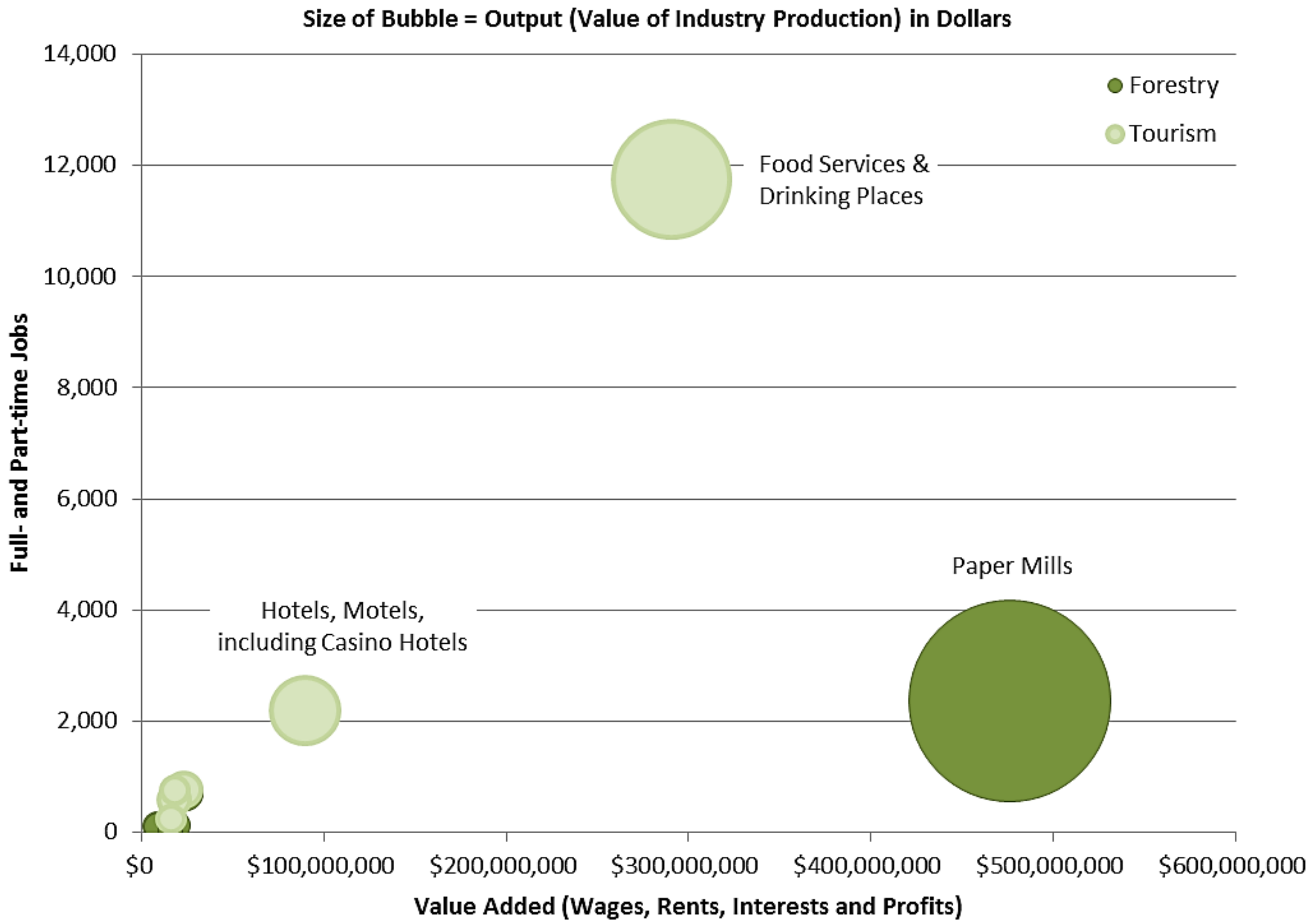


Figure 24: Arrowhead, Tourism and Recreation, Performance Compared to Forestry, 2011



NORTHEAST REGION

For analysis of the Northeast Region, which includes the four counties of Carlton, Cook, Lake, and St Louis, 2011 data is compared to 2009 data in various visual aids throughout the section.

Figure 25: Counties of the Northeast Region, Photo Source: Wikipedia

Table 14: Northeast, Summary, 2011

Source: IMPLAN	***Value Added***	***Output***	***Employment***
Northeast Region	**$12,083,082,892**	**$21,808,776,413**	**145,347**
Forestry	**$268,130,969**	**$898,226,371**	**1,796**
Prim. Forest Mfg.	$245,061,496	$830,400,297	1,179
Sec. Forest Mfg.	$12,182,062	$39,175,009	218
Forestry and Logging	$10,887,410	$28,651,065	339
Tourism and Recreation	**$402,388,011**	**$825,836,800**	**14,371**

REGIONAL ECONOMIC OVERVIEW

The table below shows the Value Added, Output and Employment totals for the Northeast Region. Regional value added totaled almost $12.1 billion in 2011, increasing from over $9.9 billion. Output in the Arrowhead Region increased from over $18.3 billion in 2009 to over $21.8 billion in 2011, with the top producing sector being iron ore mining in both years. The four-county area employs approximately 145 thousand people, up from almost 144 thousand in 2009. With over 3.4 million full- and part-time workers in the state of Minnesota, the Northeast region accounts for about 4.2% of that total employment.

Table 15: Northeast, Regional Economic Overview, Totals, 2011

Source: IMPLAN	***Value Added***	***Output***	***Employment***
Total	$12,083,082,892	$21,808,776,413	145,347

The Tables 16 through 18 display the top 10 sectors for Value Added, Output and Employment, respectively, for the Northeast Region in 2011. These tables reveal that mining iron ore remains a dominant sector in terms of value added and output measures of the economy, but is ranked seventh in employment for 2011. Employment and payroll for state and local government education remains the top employer in the Northeast Region in 2011.

Figures 17 through 19 compare the top 10 sectors in 2011 to their values in 2009. Real estate establishments experienced an increase in all three measures, 87% increase in Value Added, 87% in Output and a 59% in Employment. Offices of physicians, dentists, and other health practitioners declined 36% from 2009, which was the most significant decrease in the 2010 top Value Added sectors. Mining iron ore Output increased 87% from 2009, while Private hospitals Output increased 47%.

Table 16: Northeast, Regional Economic Overview, Top 10 Value Added, 2011

Description	***Value Added***
Mining iron ore	$1,801,154,176
Employment and payroll only (state & local govt, education)	$807,281,280
Insurance carriers	$739,043,008
Private hospitals	$720,069,248
Electric power generation, transmission, and distribution	$674,934,784
Monetary authorities and depository credit intermediation act.	$465,894,080
Real estate establishments	$364,592,032
Wholesale trade businesses	$347,627,712
Employment and payroll only (state & local govt, non-education)	$343,788,224
Offices of physicians, dentists, and other health practitioners	$321,547,808

Source: IMPLAN

Figure 26: Northeast, Regional Economic Overview, Top 10 Value Added, 2011 Compared to 2009 Values

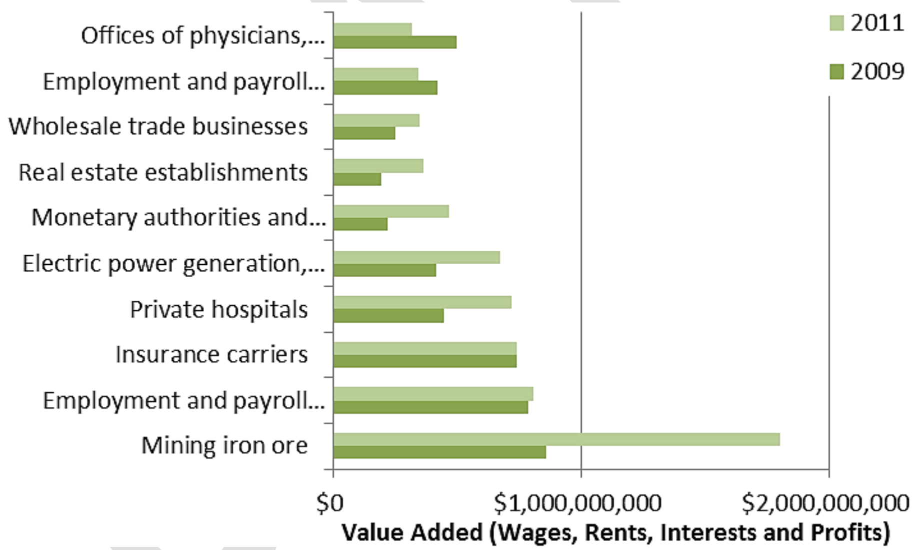


Table 17: Northeast, Regional Economic Overview, Top 10 Output, 2011

Description	*Output*
Mining iron ore	$3,897,649,408
Private hospitals	$1,317,733,376
Insurance carriers	$1,169,505,920
Electric power generation, transmission, and distribution	$1,122,870,528
Employment and payroll only (state & local govt, education)	$807,281,280
Paper mills	$766,421,888
Monetary authorities and depository credit intermediation activities	$704,190,912
Wholesale trade businesses	$495,236,864
Food services and drinking places	$494,622,880
Real estate establishments	$483,035,296

Source: IMPLAN

Figure 27: Northeast, Regional Economic Overview, Top 10 Output, 2011 Compared to 2009 Values

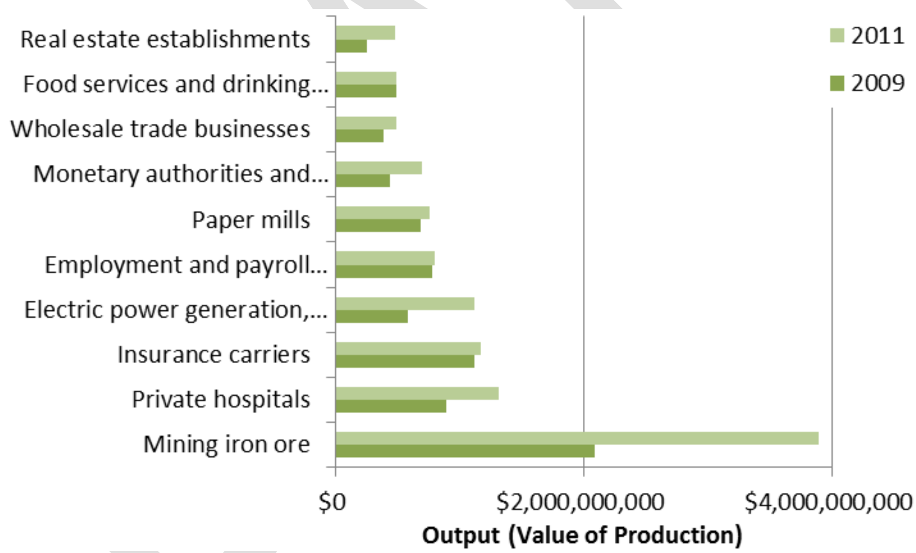
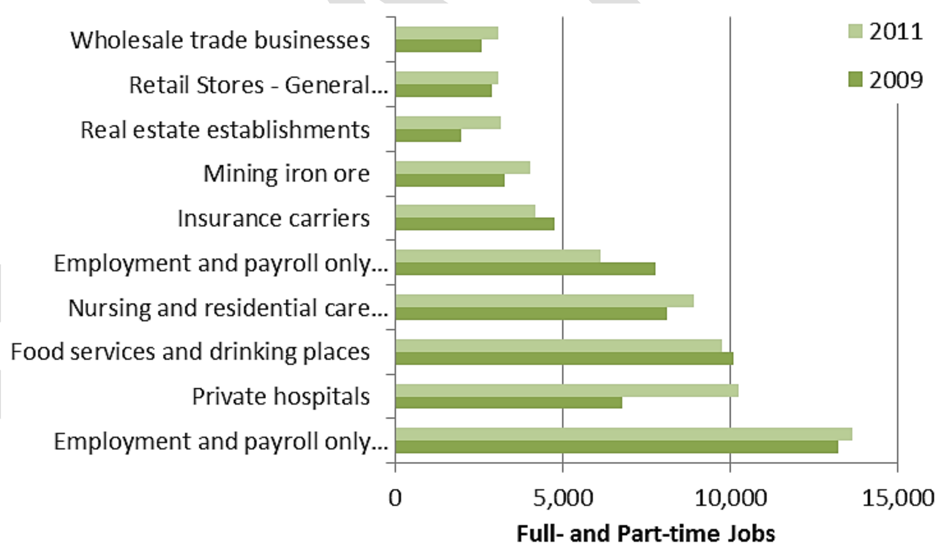


Table 18: Northeast, Regional Economic Overview, Top 10 Employment, 2011

Description	*Employment*
Employment and payroll only (state & local govt, education)	13,648
Private hospitals	10,232
Food services and drinking places	9,740
Nursing and residential care facilities	8,906
Employment and payroll only (state & local govt, non-education)	6,125
Insurance carriers	4,193
Mining iron ore	4,035
Real estate establishments	3,141
Retail Stores - General merchandise	3,074
Wholesale trade businesses	3,072

Source: IMPLAN

Figure 28: Northeast, Regional Economic Overview, Top 10 Employment, 2011 Compared to 2009 Values



FORESTRY

The forestry sectors have been broken out into three sections: Primary Forestry Manufacturing, Secondary Forestry Manufacturing, and Forestry and Logging.

The sector Electric power generation, transmission, and distribution has been deflated to represent the portion of the sector specifically related to forestry. In this case, 1.7% of all electric power generation is directly related to forestry, according to the Energy Information Administration (EIA). Thus, the numbers reported in this analysis for electric power display 1.7% of its total, to better reflect the current economic status of the forestry industry.

Some sectors among the Forestry and Logging section have been deflated to represent only the forestry related work done in that sector. For example, about 1.2% of all trucking is forestry related, according to the Minnesota Department of Economic Development, thus the original output, value added and employment for trucking in the Northeast Region have been multiplied by 1.2% to display trucking specifically related to forestry.

Table 19: Northeast, Forestry, Totals, 2011

Source: IMPLAN	***Value Added***	***Output***	***Employment***
Prim. Forestry Mfg.	$245,061,496	$830,400,297	1,179
Sec. Forestry Mfg.	$12,182,062	$39,175,009	218
Forestry and Logging	$10,887,410	$28,651,065	339
Total Forestry	**$268,130,969**	**$898,226,371**	**1,796**

Primary Forest Products Manufacturing had Value Added impact of over $245 million for 2011, decreasing 7% from 2009. Output from Primary Forest Products Manufacturing increased 1% from 2009, totaling over $830 million in 2011. Employment had the greatest decrease in Primary forestry of 15%, from 1,393 jobs in 2009 to 1,179 in 2010.

Secondary Forest Products Manufacturing decreased by 43% in Added and 35% in Output from 2009, totaling nearly $12.2 million in Value Added and almost $39.2 million in Output. Employment decreased from 318 to 218.

Forestry and Logging experienced a 26% employment decrease, equating in a loss of 143 jobs in in the Northeast region since 2009. Output declined by almost $36.3 million or 56% and Value Added declined from over $22.6 million in 2009 to almost $10.9 million in 2011, a loss of 52%.

Figure 29: Northeast, Forestry, Value Added Totals, 2011 Compared to 2009 Values

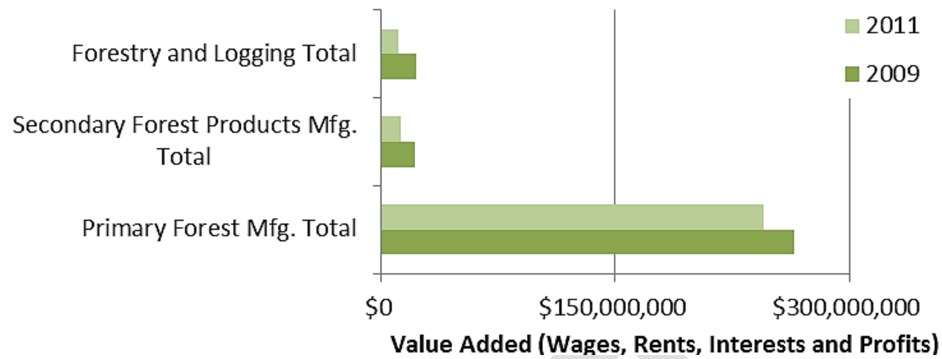


Figure 30: Northeast, Forestry, Output Totals, 2011 Compared to 2009 Values

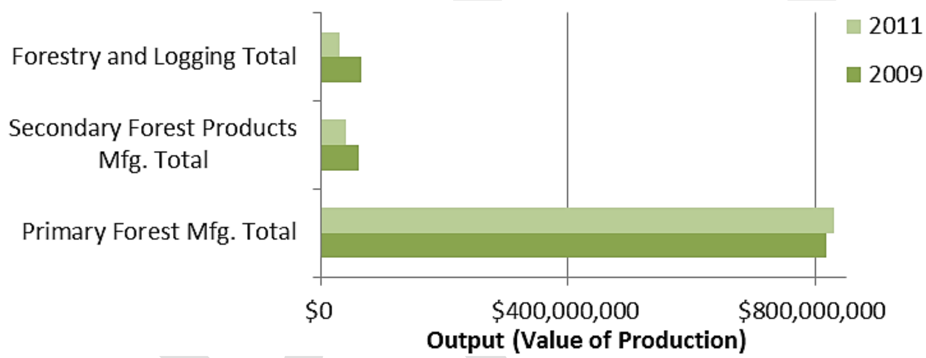


Figure 31: Northeast, Forestry, Employment Totals, 2011 Compared to 2009 Values

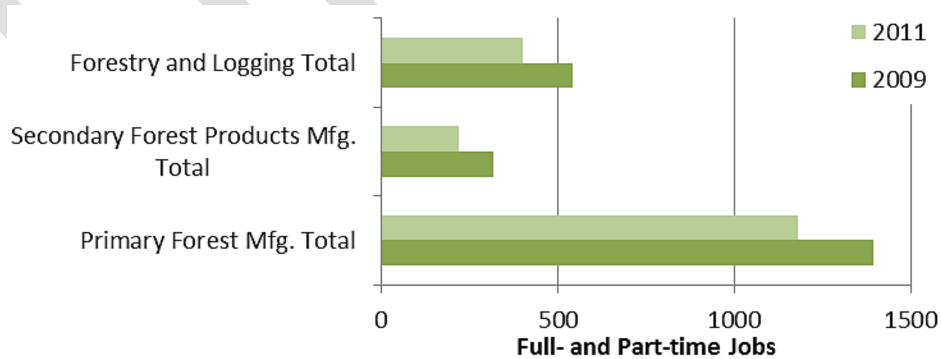


Table 20: Northeast, Forestry, Value Added, 2011

Source: IMPLAN

Primary Forest Products Manufacturing		***Value Added***
Paper mills		$212,803,232
Reconstituted wood product manufacturing		$17,024,918
Electric power generation, transmission, and distribution[1]		$11,473,891
Sawmills and wood preservation		$3,759,455
	Primary Forest Mfg. Total	$245,061,496
Secondary Forest Products Manufacturing		***Value Added***
All other miscellaneous wood product manufacturing		$3,890,265
Wood windows and doors and millwork manufacturing		$2,379,743
Wood kitchen cabinet and countertop manufacturing		$1,975,837
Paperboard container manufacturing		$1,612,217
Wood container and pallet manufacturing		$1,002,478
Showcase, partition, shelving, and locker manufacturing		$621,169
Prefabricated wood building manufacturing		$285,589
Nonupholstered wood household furniture manufacturing		$207,429
Engineered wood member and truss manufacturing		$141,662
Office furniture and custom architectural woodwork and millwork manufacturing		$65,673
	Secondary Forest Products Mfg. Total	$12,182,062
Forestry and Logging		***Value Added***
Commercial logging		$9,554,900
Forestry, forest products, and timber tract production		$815,401
Transport by truck[2]		$461,598
Support activities for agriculture and forestry[3]		$55,511
	Forestry and Logging Total	$10,887,410
Northeast Forestry Value Added Grand Total		**$268,130,969**

[1] 1.7% of totals for Electric power generation, transmission, and distribution is related to forestry manufacturing, deflated number is displayed, EIA

[2] 1.2% of totals for Transport by truck is related to forestry and logging, deflated number is displayed, DEED

[3] 2.2% of totals for Support activities for agriculture and forestry are related to forestry and logging, deflated number is displayed, DEED

Figure 32: Northeast, Forestry, Value Added, 2011 Primary Forestry Compared to 2009 Values

Figure 33: Northeast, Forestry, Value Added, 2011 Secondary Forestry Compared to 2009 Values

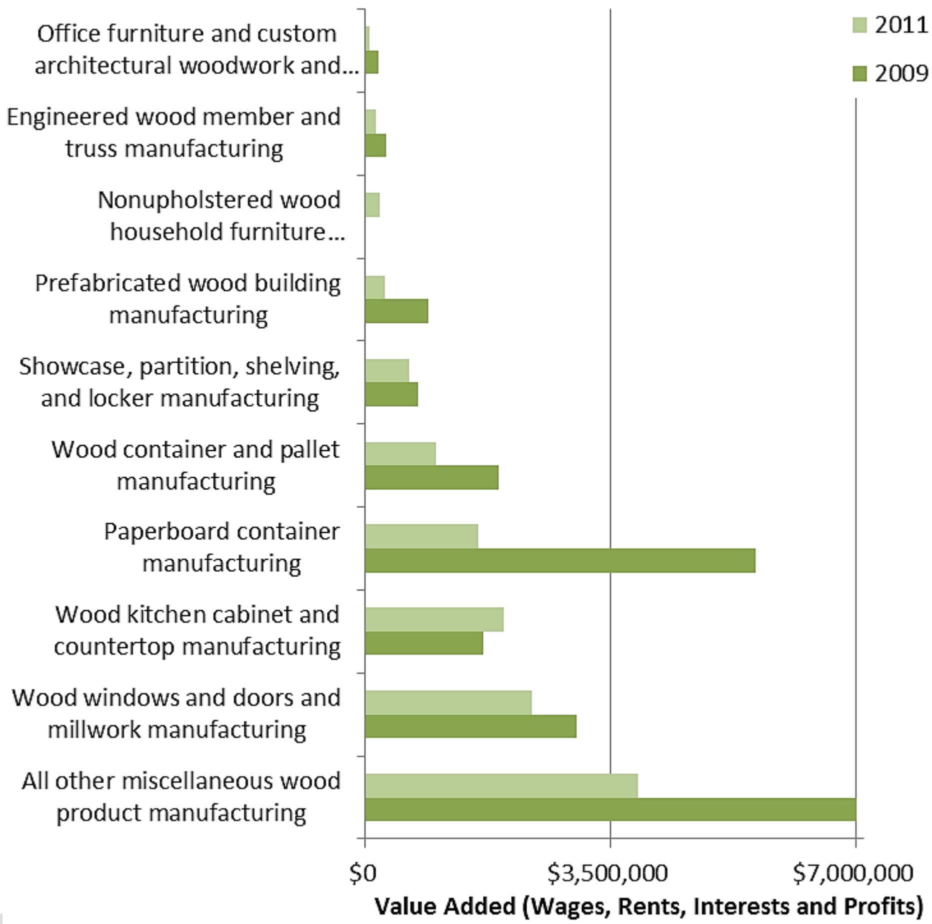


Figure 34: Northeast, Forestry, Value Added, 2011 Forestry and Logging Compared to 2009 Values

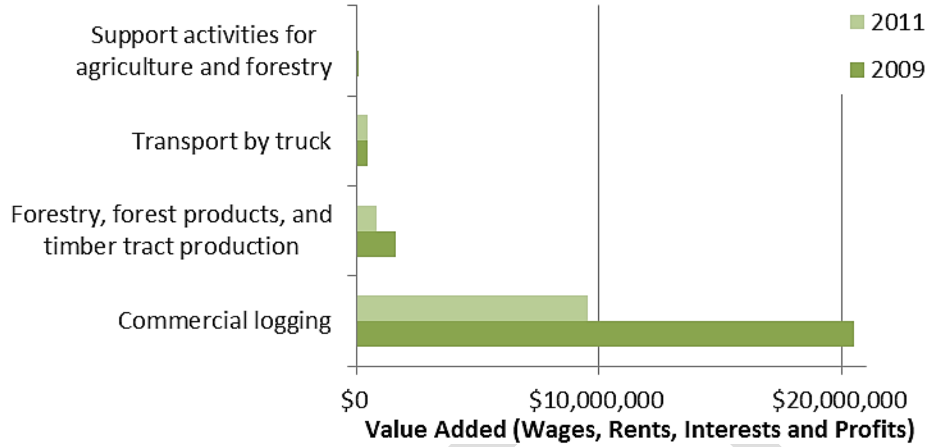


Table 21: Northeast, Forestry, Output, 2011

Source: IMPLAN

Primary Forest Products Manufacturing		***Output***
Paper mills		$766,421,888
Reconstituted wood product manufacturing		$32,953,026
Electric power generation, transmission, and distribution[1]		$19,088,799
Sawmills and wood preservation		$11,936,584
	Primary Forest Mfg. Total	$830,400,297
Secondary Forest Products Manufacturing		***Output***
Wood windows and doors and millwork manufacturing		$9,700,840
All other miscellaneous wood product manufacturing		$9,510,050
Paperboard container manufacturing		$8,284,377
Wood kitchen cabinet and countertop manufacturing		$6,183,741
Wood container and pallet manufacturing		$2,054,540
Showcase, partition, shelving, and locker manufacturing		$1,907,878
Prefabricated wood building manufacturing		$627,694
Engineered wood member and truss manufacturing		$378,391
Nonupholstered wood household furniture manufacturing		$324,034
Office furniture and custom architectural woodwork and millwork manufacturing		$203,464
	Secondary Forest Products Mfg. Total	$39,175,009
Forestry and Logging		***Output***
Commercial logging		$25,030,758
Transport by truck[2]		$1,891,393
Forestry, forest products, and timber tract production		$1,637,686
Support activities for agriculture and forestry[3]		$91,228
	Forestry and Logging Total	$28,651,065
Northeast Forestry Output Grand Total		**$898,226,371**

[1] 1.7% of totals for Electric power generation, transmission, and distribution is related to forestry manufacturing, deflated number is displayed, EIA

[2] 1.2% of totals for Transport by truck is related to forestry and logging, deflated number is displayed, DEED

[3] 2.2% of totals for Support activities for agriculture and forestry are related to forestry and logging, deflated number is displayed, DEED

Figure 35: Northeast, Forestry, Output, 2011 Primary Forestry Compared to 2009 Values

Figure 36: Northeast, Forestry, Output, 2011 Secondary Forestry Compared to 2009 Values

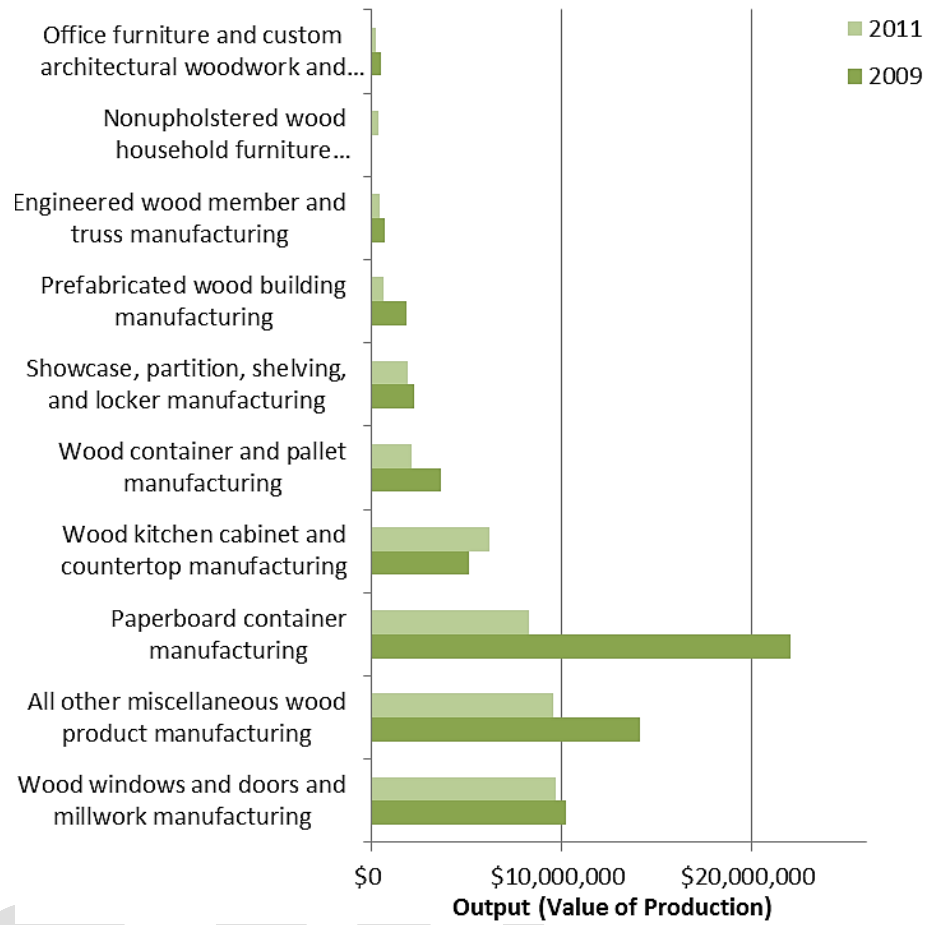


Figure 37: Northeast, Forestry, <u>Output</u>, 2011 Forestry and Logging Compared to 2009 Values

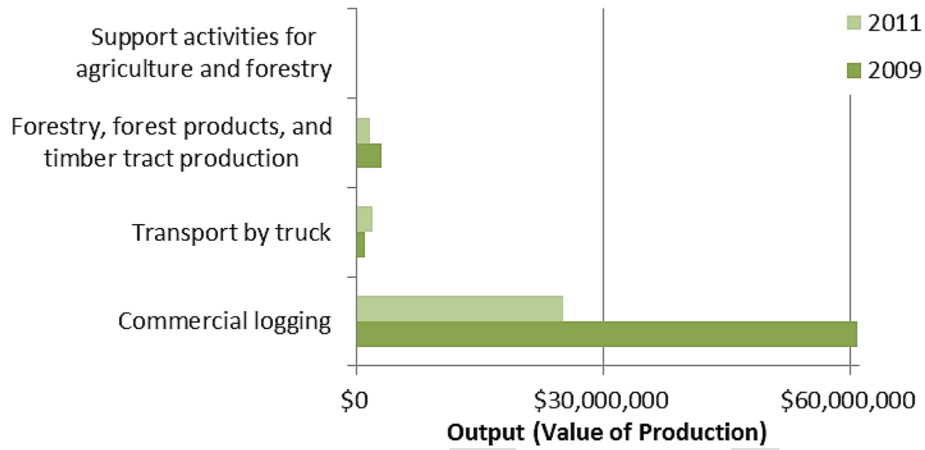


Table 22: Northeast, Primary Forestry, Employment, 2011

Source: IMPLAN

Primary Forest Products Manufacturing	***Employment***
Paper mills	998
Reconstituted wood product manufacturing	117
Sawmills and wood preservation	41
Electric power generation, transmission, and distribution	23
Primary Forest Mfg. Total	1179
Secondary Forest Products Manufacturing	***Employment***
Wood windows and doors and millwork manufacturing	64
All other miscellaneous wood product manufacturing	50
Wood kitchen cabinet and countertop manufacturing	50
Paperboard container manufacturing	22
Wood container and pallet manufacturing	13
Showcase, partition, shelving, and locker manufacturing	10
Prefabricated wood building manufacturing	4
Office furniture and custom architectural woodwork and millwork manufacturing	2
Engineered wood member and truss manufacturing	2
Nonupholstered wood household furniture manufacturing	2
Secondary Forest Products Mfg. Total	218
Forestry and Logging	***Employment***
Commercial logging	381
Transport by truck	8
Support activities for agriculture and forestry	5
Forestry, forest products, and timber tract production	4
Forestry and Logging Total	399
Northeast Forestry Employment Grand Total	**1796**

[1] 1.7% of totals for Electric power generation, transmission, and distribution is related to forestry manufacturing, deflated number is displayed, EIA

[2] 1.2% of totals for Transport by truck is related to forestry and logging, deflated number is displayed, DEED

[3] 2.2% of totals for Support activities for agriculture and forestry are related to forestry and logging, deflated number is displayed, DEED

Figure 38: Northeast, Forestry, Employment, 2011 Primary Forestry Compared to 2009 Values

Figure 39: Northeast, Forestry, Employment, 2011 Secondary Forestry Compared to 2009 Values

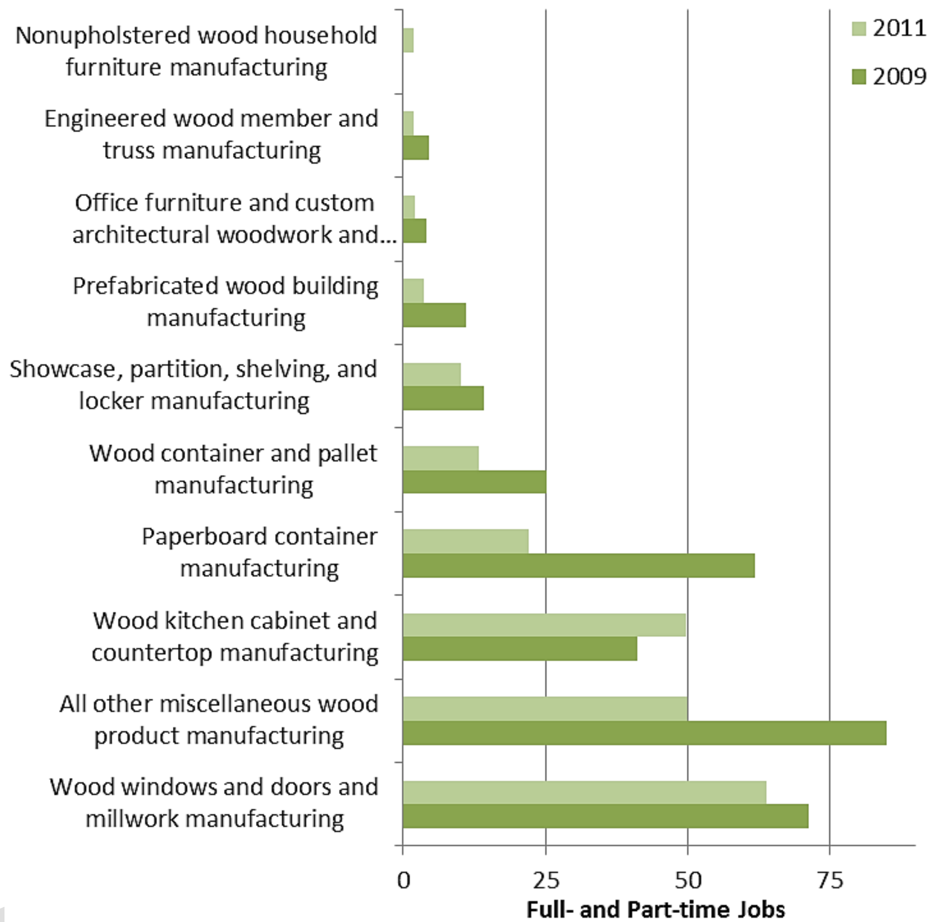


Figure 40: Northeast, Forestry, Employment, 2011 Forestry and Logging Compared to 2009 Values

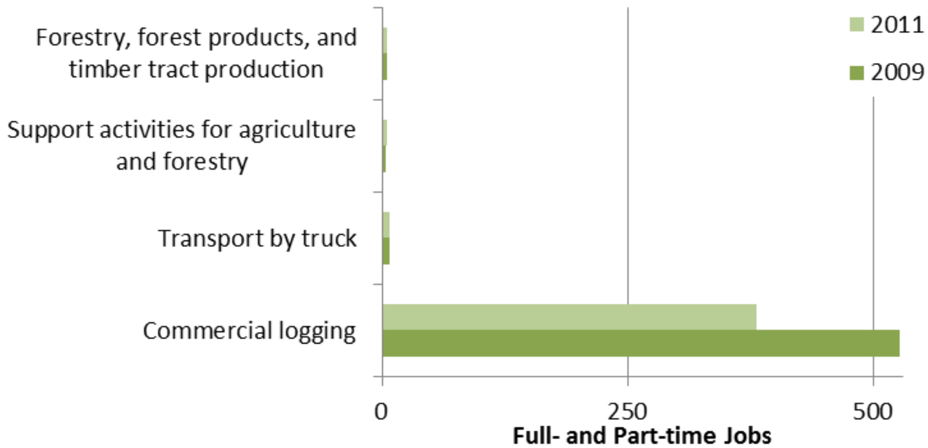


Figure 41: Northeast, Forestry, Summary, Top Performing Sectors, 2011

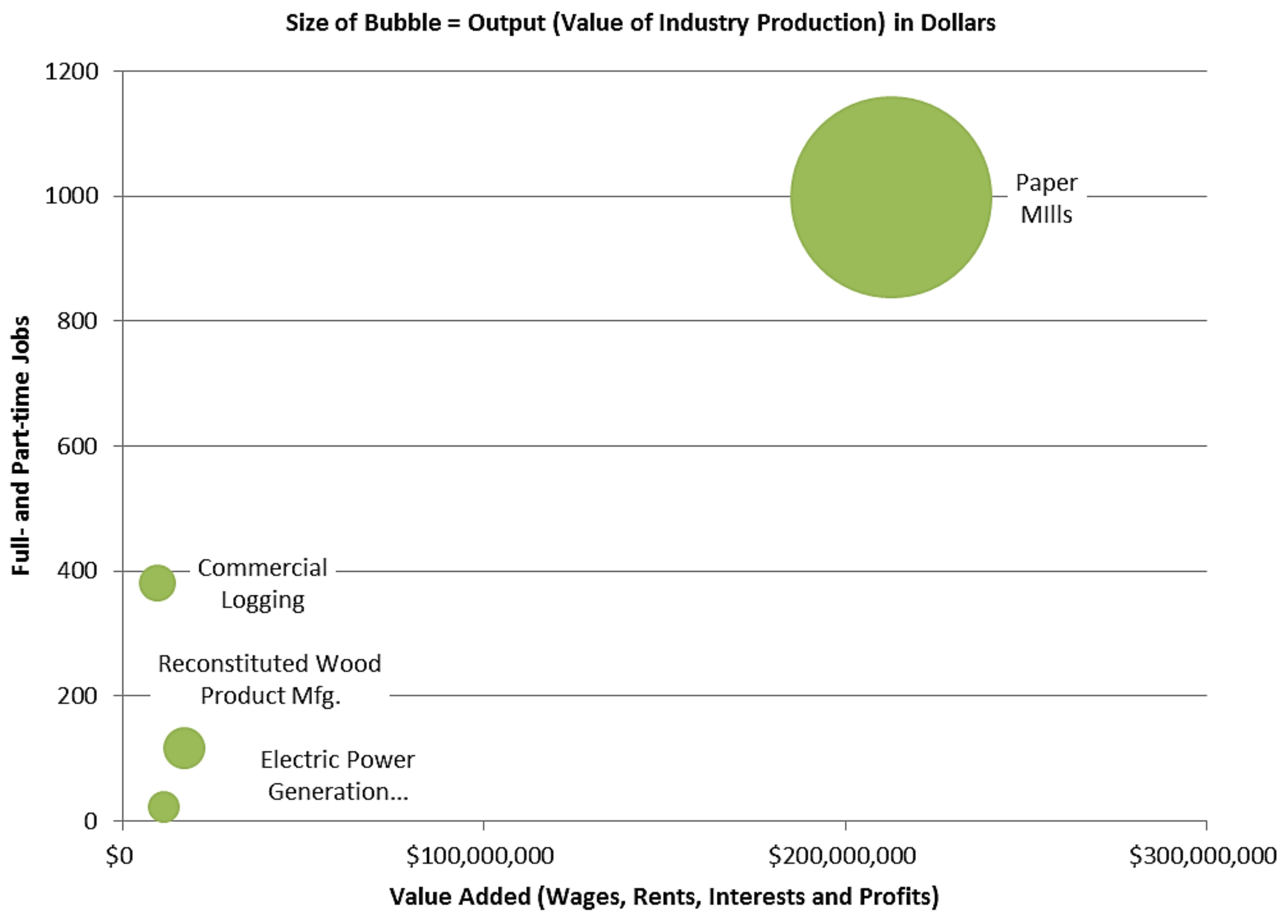
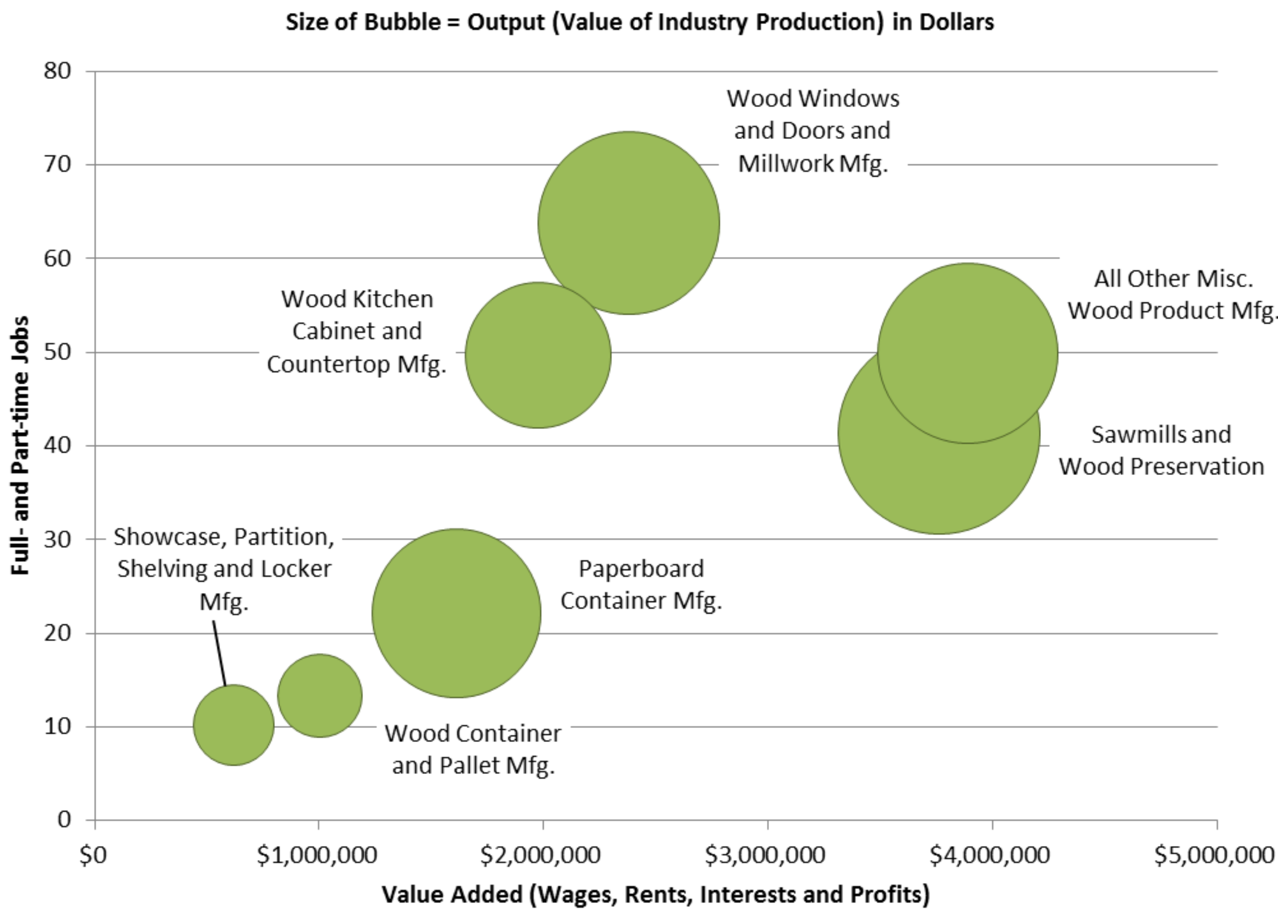


Figure 42: Northeast, Forestry, Summary, Middle Performing Sectors, 2011



TOURISM AND RECREATION

The Tourism and Recreations sectors remain key players in the Northeast Region of Minnesota. As you saw in the Northeast economic overview, Food services and drinking places holds a spot in the top 10 in both Employment and Output. Food services and drinking places and Hotels, motels and casino hotels have the largest tourism impact on the northeast in all three measures.

Table 23: Northeast, Tourism and Recreation, Totals, 2011

Source: IMPLAN	***Value Added***	***Output***	***Employment***
Total	$402,388,011	$825,836,800	14,371

The tables and figures below display the detail of the Tourism and Recreation industry in the Northeast region of Minnesota. Generally the tourism industries have grown since 2009 in both Value Added and Output, but Employment had experienced a general decline among the tourism sectors.

Table 24: Northeast, Tourism and Recreation, Value Added, 2011

Source: IMPLAN

Description	*Value Added*
Food services and drinking places	$245,861,696
Hotels and motels, including casino hotels	$72,869,120
Amusement parks, arcades, and gambling industries	$18,933,070
Other amusement and recreation industries	$15,569,572
Museums, historical sites, zoos, and parks	$14,631,979
Other accommodations	$14,352,058
Automotive equipment rental and leasing	$7,792,549
Performing arts companies	$3,620,876
Promoters of performing arts and sports and agents for public figures	$2,668,829
Fitness and recreational sports centers	$2,577,699
Independent artists, writers, and performers	$1,658,814
Bowling centers	$1,634,467
Spectator sports companies	$217,282
Total	**$402,388,011**

Figure 43: Northeast, Tourism and Recreation, Value Added, 2011 Compared to 2009 Values

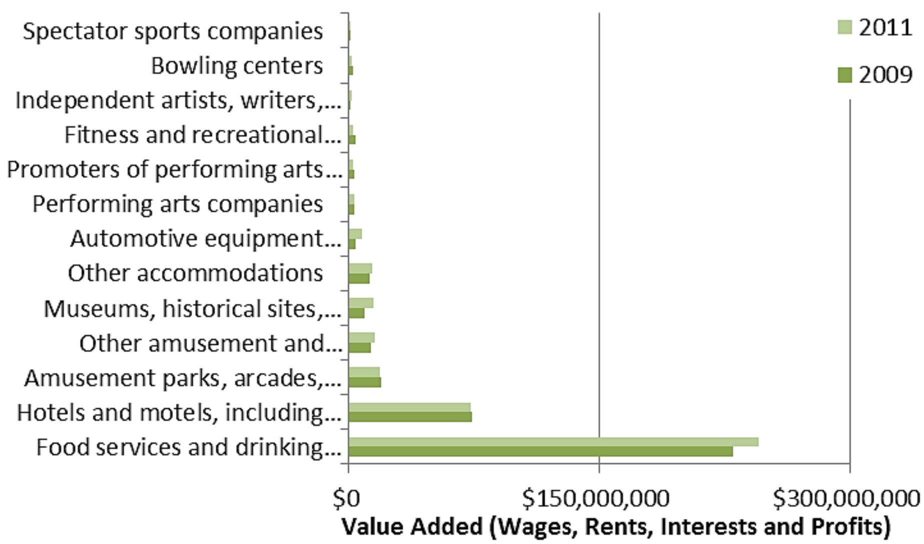


Table 25: Northeast, Tourism and Recreation, Output, 2011

Source: IMPLAN

Description	***Output***
Food services and drinking places	$494,622,880
Hotels and motels, including casino hotels	$160,516,224
Amusement parks, arcades, and gambling industries	$39,470,412
Other accommodations	$32,323,726
Museums, historical sites, zoos, and parks	$26,781,522
Other amusement and recreation industries	$26,438,140
Automotive equipment rental and leasing	$12,809,813
Promoters of performing arts and sports and agents for public figures	$9,836,482
Performing arts companies	$8,377,862
Independent artists, writers, and performers	$5,420,264
Fitness and recreational sports centers	$5,324,226
Bowling centers	$2,536,585
Spectator sports companies	$1,378,664
Total	**$825,836,800**

Figure 44: Northeast, Tourism and Recreation, Output, 2011 Compared to 2009 Values

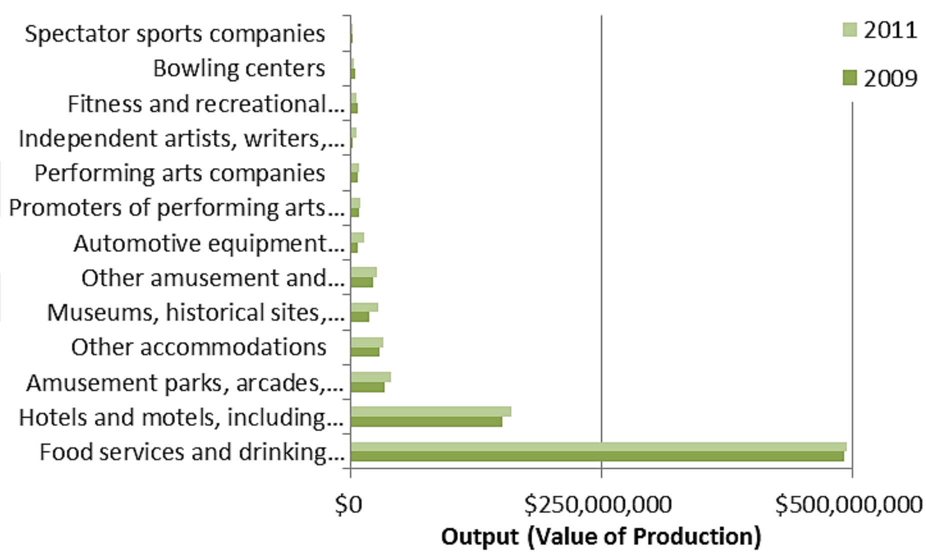


Table 26: Northeast, Tourism and Recreation, Employment, 2011

Source: IMPLAN

Description	***Employment***
Food services and drinking places	9,740
Hotels and motels, including casino hotels	1,742
Amusement parks, arcades, and gambling industries	615
Other amusement and recreation industries	591
Other accommodations	439
Performing arts companies	327
Promoters of performing arts and sports and agents for public figures	232
Museums, historical sites, zoos, and parks	230
Fitness and recreational sports centers	173
Independent artists, writers, and performers	97
Bowling centers	74
Automotive equipment rental and leasing	60
Spectator sports companies	52
Total	**14,371**

Figure 45: Northeast, Tourism and Recreation, Employment, 2011 Compared to 2009 Values

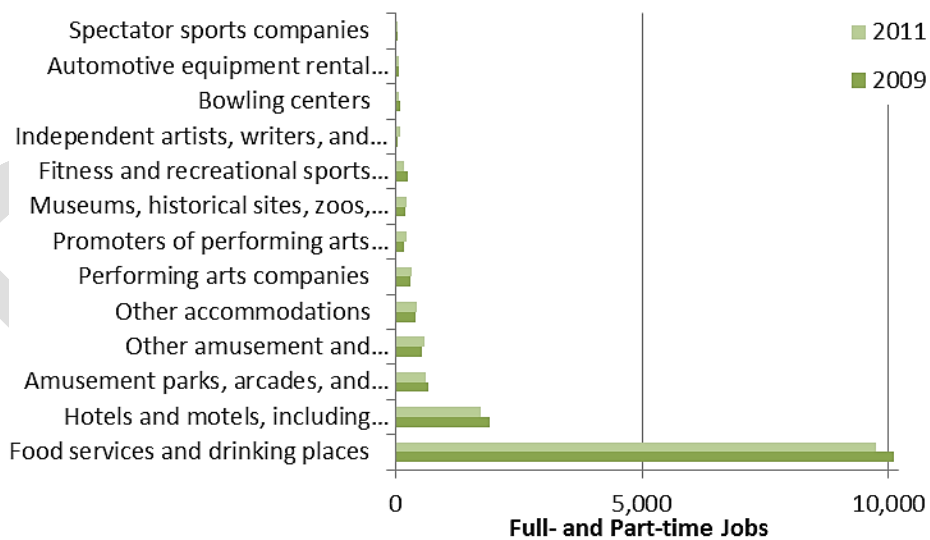


Figure 46: Northeast, Tourism and Recreation, Performance Compared to Forestry, 2011